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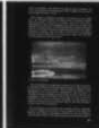
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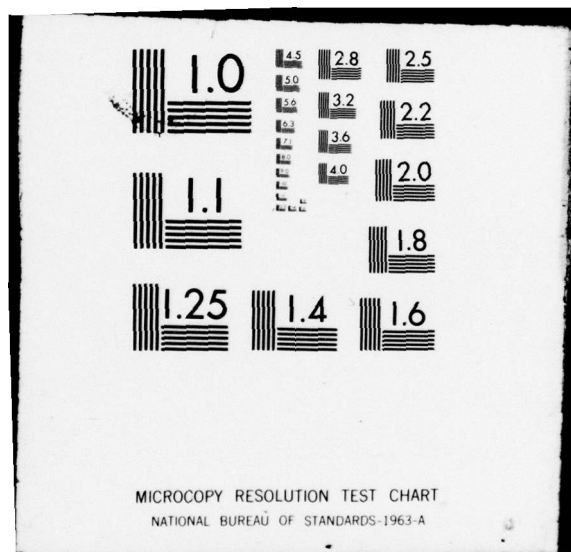
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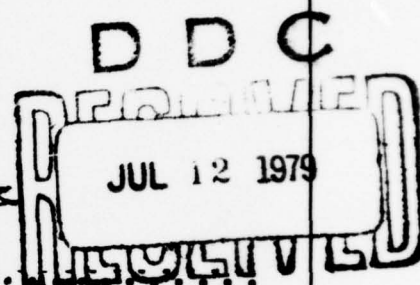
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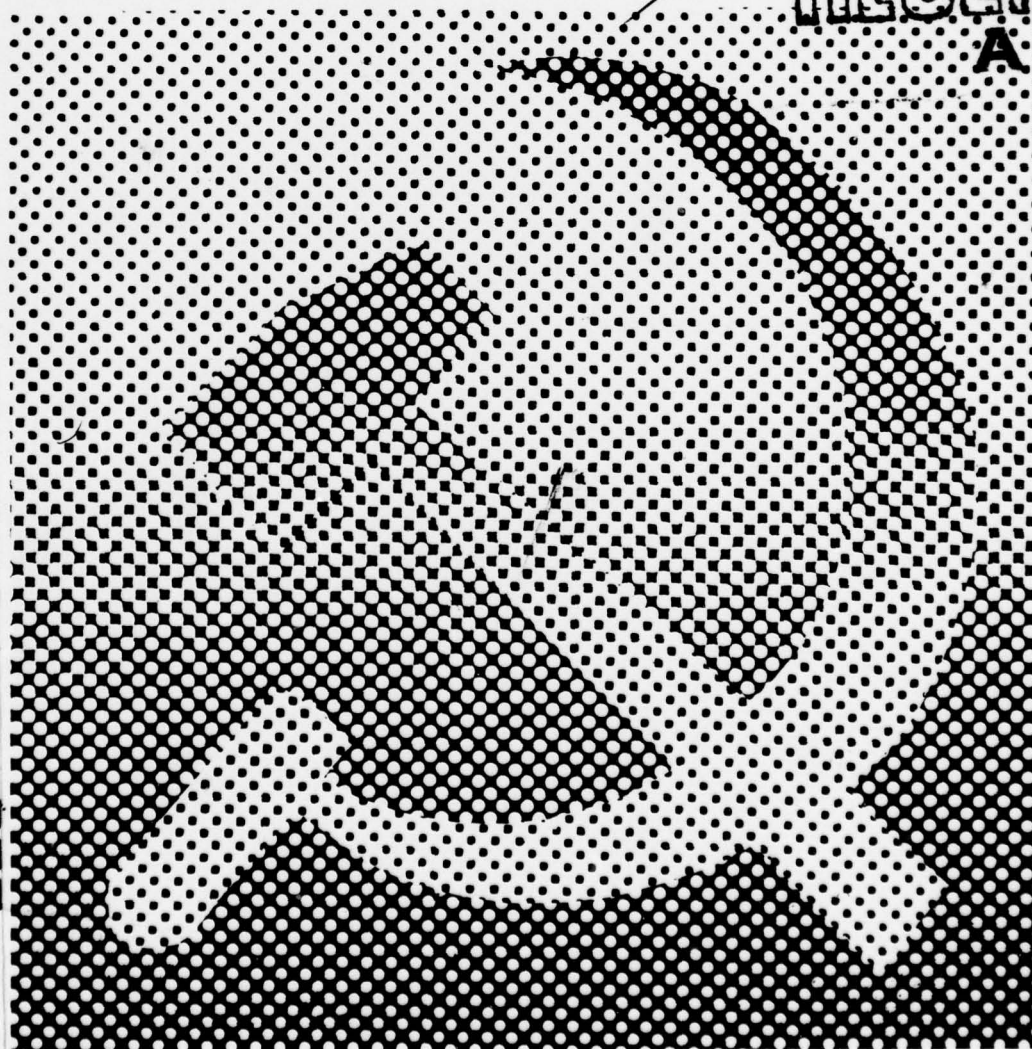
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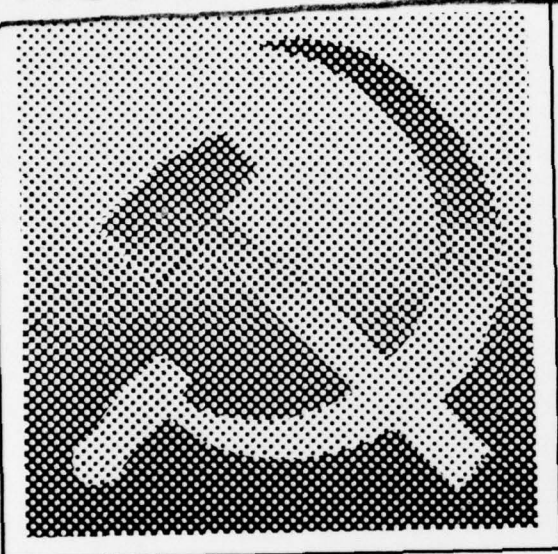
ИЗДАТЕЛЬСТВО ДОСААФ

Москва — 1972

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Long-Range Missile-Equipped,

A Soviet Views



12) 84 p.
11) 1972

Author:
Major General of Aviation B. A. Vasil'yev
Moscow 1972

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PUBLISHED
UNDER THE AUSPICES OF
THE UNITED STATES AIR FORCE

Translated by the
DGIS Multilingual Section
Translation Bureau
Secretary of State Department
Ottawa, Canada

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DDC TAB	<input type="checkbox"/>
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AMERICAN EDITOR'S INTRODUCTION

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Long-Range, Missile-Equipped is the fifteenth volume in the "Soviet Military Thought" series translated and published under the auspices of the United States Air Force. The Soviet edition was published in 1972 in 50,000 copies "for those of our young people who intend to dedicate themselves to service in the Air Force."

Major General of Aviation Vasil'yev is presently a deputy chief of the Soviet Air Force Political Directorate and chief of the Agitprop Department within that directorate. He traces in detail the history of Soviet Long-Range Aviation from its inception up to 1972. He discusses the development of the force from the early days of the Il'ya Muromets bomber to the modern-day supersonic jet bombers. He describes the evolution of the organizational structure of the bomber arm of the Soviet Air Force from the Civil War period to modern times. A great deal of attention is of course devoted to bomber operations during the Great Patriotic War "which led to the defeat of Fascist Germany and imperialist Japan." The postwar development of Long-Range Aviation is "inseparably associated with the great changes brought about by the military-technical revolution." Although the weapons systems of today are highly complex and of unprecedented power, the author emphasizes that man remains the key to their successful employment.

The importance of the role played by the Communist Party and its leadership—past, present, civilian, and military—is stressed throughout. The author underscores the need for the personnel in Long-Range Aviation in peacetime to always be combat ready in order to be able to reliably defend the motherland.

Unfortunately, what could be called the "modern era" of Soviet Long-Range Aviation (the post-1967 period) is not covered in depth in this book. Chapter 3 addresses this important period, but is only 15 pages in length. Since eight of the 11 photos presented in the book are to be found in this chapter, the amount of space devoted to substantive coverage of this period is quite limited.

Nonetheless, this book is interesting and provides a good description of

the history of Soviet bomber aviation. It should be of interest to a wide circle of readers.

*The translation and publication of **Long-Range, Missile-Equipped** does not constitute approval by any U.S. Government organization of the inferences, findings, and conclusions contained therein. Publication is solely for the exchange and stimulation of ideas.*

FOREWORD

Major General of Aviation B. A. Vasil'yev, author of this book, gives a well-documented account of the main phases in the development of Long-Range Aviation and its combat operations. Harking back to the creation of the first Soviet air group consisting of aircraft of the Il'ya Muromets class, the author speaks of the important organizational work done by the party, and by Lenin personally, in building up our heavy aviation as a component of the Soviet Air Force.

Soviet heavy aviation was founded during the first months of the existence of the young Soviet republic. The author discloses in detail the historical succession of, and connection between, our Heavy Bomber Aviation (TBA),* Long-Range Bomber Aviation (DBA),† Long-Range Aviation (ADD),‡ 18th Air Army, and our present Long-Range Aviation (DA). Versed in the subject, he tells us about the first flyers and their heroic feats during the Civil War and the period of foreign interventions.

Especially impressive is the narrative concerning the activities of DBA regiments, ADD formations, and the 18th Air Army during the Soviet nation's struggle with the German Fascist occupiers. The author, himself a veteran of the Great Patriotic War, reveals with documentary authenticity the sources of the feats performed by our air warriors, with particular reference to Hero of the Soviet Union N. F. Gastello and his emulators. The reader is also made familiar with the combat achievements of many other pilots and navigators who boldly pounded the hateful enemy.

Chapter 2 highlights the role of our ADD's political organs and party organizations in mobilizing our men to repulse the Hitlerite occupiers. Those flyers who were party members were first into combat, setting an

* [TBA — *Tyazhelaya bombardirovochnaya aviatsiya*
'Heavy Bomber Aviation'—U.S. Ed.]

† [DBA — *Dal'nebombardirovochnaya aviatsiya*
'Long-Range Bomber Aviation'—U.S. Ed.]

‡ [ADD — *Aviatsiya dal'nego deystviya*
'Long-Range Aviation,' now referred to as *Dal'nyaya aviatsiya (DA)*—
U.S. Ed.]

example of heroism and often bringing the hour of victory closer at the cost of their own lives.

The book reveals the sources of the patriotic feats, the political and moral-combat qualities of our pilots, navigators, flight mechanics, aerial gunners, and radio operators. The author tells us convincingly about the boundless devotion of our aircrews to their homeland, party, and people.

The reader, especially the young one, is made familiar with the important role played by long-range bomber formations during the principal operations of the Great Patriotic War, which led to the defeat of Fascist Germany and imperialist Japan. Criticizing contemporary imperialist falsifiers of the history of the last war, the author analyzes the sources of the victory attained by our army at no light cost in a fierce conflict with a strong, well-equipped, and, until the last days, stubbornly resisting enemy. A decisive role in the rout of the Hitlerite air force in World War II was played by the Soviet Air Force. The facts cited in this book testify to the great contribution made by ADD toward destroying Hitler's air force on the ground and winning air superiority for the VVS.*

Chapter 3 is devoted to the development of Long-Range Aviation during the postwar years. Its new features and capabilities, namely, jet propulsion, supersonic speed, and missile armament, are inseparably associated with the great changes brought about by the military-technical revolution. These changes have found expression in the creation of weapons of unprecedented power, and in the advent of fighting men with a novel qualification: pilots and navigators with an engineering degree. In our Long-Range Aviation, as in the Soviet Air Force as a whole, ultramodern combat equipment and the personnel who have mastered it constitute a single entity. However, the major role belongs, as formerly, to man. The new technology has great potential, but this will be realized only when the Soviet serviceman uses the equipment effectively in combat.

In this chapter the author emphasizes that the high moral-political and combat qualities of pilots, navigators, and all aircrew personnel are based on their faithfulness to the great Lenin's behests concerning the defense of our socialist homeland, on their ideological maturity, and on their dedication to the cause of the Communist Party. Our aircrews' high level of professional skill and training, together with the fact that units are equipped with ultramodern equipment, ensures the combat readiness of our present-day Long-Range Aviation.

* [*Voyenno-vozdushnyye sily*—'Soviet Air Force'—U.S. Ed.]

It was not the author's aim to give a comprehensive or exhaustive picture of the development of Long-Range Aviation. He has merely written a book for those of our young people who intend to dedicate themselves to service in the Air Force. The book will undoubtedly also be of interest to veterans of the past war, observing that they contributed to the victory which it describes. The author leads young pilots, navigators, and other personnel of Long-Range Aviation to the conclusion that even in peacetime they must keep themselves constantly ready to defend their motherland and enhance the heroic traditions of their units.

The book calls upon the young reader to be vigilant, to be untiring in his efforts to enhance the defensive might of our socialist homeland, and to be constantly ready to defend it.

Marshal of Aviation F. Agal'tsov

Chapter 1. The Motherland of Heavy Aviation

In December 1913 newspapers in many countries featured articles under bold headlines such as "Sensation in Russia," "Unprecedented Event in Aeronautics," and "The Russians are Ahead!" These articles reported the maiden flight of a giant four-engine aircraft named after the Russian epic hero Il'ya Muromets. In editorial columns this flight was hailed as an event of worldwide importance, as the beginning of a new era in aircraft construction, and as an enormous stimulus for the development of aviation.

However, many foreign newspapers and "authorities" in major capitalist countries questioned the very fact of the flight and the capability of building such a large aircraft. Eminent "consultants" assured their readers that the announcement about the "flying boxcar" was nothing more than a Yuletide joke to amuse the newspaper satirists' public.

Nonetheless, the world's first heavy aircraft, the Il'ya Muromets, really did exist and actually completed its first 15-minute flight successfully. In December 1973 the 60th anniversary of that outstanding event will be celebrated.

A mere 20 years had elapsed when, at the 1933 May Day parade, an armada including several hundred of these giants flew over Red Square. Just 12 years later, during the decisive April engagement of 1945, a blow was inflicted on Hitler's troops and installations by 1500 Soviet long-range bombers. . . .

A little more than three decades separate the first event from the third. In terms of the history of our motherland, this is not a long time. But how full of events was this short period! What a giant step was made by heavy aviation!

In half a century, the flying speed of our heavy aircraft rose 15-fold, their range increased 100-fold, and their payload capacity went up more than 150-fold. Few sectors of science and technology can claim such progress.

It was not by chance that the world's first heavy aircraft took off from Russian soil. Moreover, this event would have taken place much sooner if the reactionary autocratic regime had not retarded the progress of native scientific thought, and if "the powers that be" in Russia had not deferred to foreign "authorities," curbing the talents of their own nation.

The Muromets was not the only heavy aircraft in the history of Russian aviation. The foremost Russian scientists, designers, and engineers had been working persistently on heavy aircraft since 1909. Several types of heavy aircraft had been designed, including the Grand, the Russkiy Vityaz', and the Svyatogor. Within a few years, five different models of heavy aircraft appeared. Even the conservatively disposed Tsarist bureaucrats could not hold back the development of Russia's progressive scientific thought.

The Il'ya Muromets was more successful than the others. Whereas on its first flight it developed a speed of 90 kilometers per hour with a disposable load of 600 kilograms, half a year later an aircraft of this class set world records for payload capacity and altitude. Not long afterward, one of them covered the St. Petersburg-Orsha route, a distance of 700 kilometers, in 8 hours, achieving what was a great range and a long-duration nonstop flight for that time.

In spite of this, members of the Tsar's family and many officials in Russia's War Department were skeptical about the inventions of their compatriots, and only the threat of World War I forced the Tsarist government to negotiate a contract for the construction of 10 Murometses with the Russo-Baltic Railroad Car Plant.

Thus, precedence in creation of heavy aviation belongs to Russian scientific and technological thought. Other countries could not anticipate Russia in the building of heavy combat aircraft. The credit for designing and building multiengine aircraft belongs to none other than our talented Russian engineers and scientists, most of whom had come from the common people. A new aviation technology was created by their wits and labor, and by the hands of the skilled craftsmen at the Russo-Baltic Railroad Car Plant.

The first four aircraft of the Il'ya Muromets class had no armament. They were assigned to the staffs of the field armies for reconnaissance purposes. However, sights and devices for the suspension and release of bombs, as well as cameras and machine guns, were soon developed and installed. The Muromets became a multipurpose aircraft. The crews conducted reconnaissance in the frontal zone and made prolonged raids deep into the enemy's rear area, fought successful duels with hostile fighters, bombed enemy facilities, and strafed his troops and balloons.

A year after the takeoff of Il'ya Muromets No. 1, our heavy aircraft were formed into detachments. Subsequently, the world's first formation of heavy aircraft was established. In December 1914 an order was promulgated authorizing the creation of a heavy aircraft squadron, and the regulations governing it were ratified. Just 2 months later, the Muromets crews were flying their first sorties. Soon the crews mastered the art of photographic reconnaissance of installations deep in the enemy's rear area, acquired expertise in daylight bombing, and became proficient in aerial combat with enemy aircraft.

In early December 1915 new tables of organization and equipment were introduced for the squadron, which in a short time became a large formation with 30 heavy aircraft, 20 light aircraft, more than 1300 specialists, and its own ground services to support airworthiness and combat capability. The rise in the levels of skill and training of the squadron's aircrew personnel permitted a transition to group flying and to night operations. By 1916-17, in countering enemy aviation, the Muromets aircrews were already carrying out combat missions under cover of their own fighters.

As new aircraft became available and the standards of aircrew training improved, the range of sorties rose and the scope of performable missions increased. Originally, the squadron was based at Yablonny airfield (near Warsaw), from which it mounted attacks on German troops and military targets in East Prussia. Later the squadron was transferred from the Western to the Northwestern Front, where it was based near Pskov. From here the Murometses bombed the enemy's seaplane base near Riga, as well as arsenals, ammunition dumps, and railroad junctions held by the Germans in the Baltic area. During the period 1915-17, the squadron's aircraft flew more than 300 sorties and dropped more than 3500 poods* of bombs, spending more than 1000 hours in the air. At the end of World War I, most of the squadron's personnel and its aircraft were transferred to the Southwestern Front near Vinnitsa, where they remained, even after the October Revolution, until February 1918.

The founder of the Red Air Fleet was Vladimir Il'ich Lenin. He was tireless in his efforts to defend the conquests of the October Revolution, i.e., those of the young Republic of the Soviets. On his recommendation, the Council of People's Commissars decreed that existing aircraft and aviation units be retained in the national interest. During the period 1918-19, the aircraft industry was nationalized. According to the flyer Tuman-skiy, as early as December 1917 Lenin expressed a special interest in the Il'ya Muromets. The great strategist of the revolution wanted the specifications of this heavy bomber, which had no counterpart in the

*[1 pood equals 36.1 pounds—U.S. Ed.]

World War I aviation of other countries. Lenin insisted on a report giving the aircraft's bomb load and defensive capability, the composition and flying conditions of its aircrew, and the work load and combat operations of the first squadron of these aircraft.

While assembling our armed forces and preparing the decree which would found the Red Army, Lenin decided that our heavy aviation should also be put into the service of the revolution.

One of the units formed in accordance with Lenin's instructions was the Northern Air Group. It was established in March 1918 by a decision of the All-Russian Collegium of the Air Force.

During this period, a large expedition consisting of 16 seagoing vessels, including several icebreakers, was made ready at the direction of the Council of People's Commissars. The principal purpose of the expedition was to develop our northern coastline and other remote regions of the young Soviet Republic. The plan envisaged the participation of the Northern Air Group flying their aircraft of the Il'ya Muromets class, but this plan was never implemented.

With the onset of foreign intervention and the Civil War, the situation changed markedly. In view of the threat to Petrograd, the Northern Air Group, having received several aircraft from the Russo-Baltic plant, was evacuated to the Volga area.

The Northern Air Group was formed in Petrograd by Aleksey Vasil'yevich Pankrat'yev, one of the best air force pilots and an instructor at the former Gatchina Air Academy. In July 1918, when Pankrat'yev was appointed to manage aircraft construction at a plant, command of the group went to I. S. Bashko, who 6 weeks earlier had flown a Muromets to friendly territory from an airfield near Bobruysk, then occupied by White Poles.

When the young Soviet state was threatened by intensified foreign intervention and by the activation of internal counterrevolution, Lenin called for additional air force detachments as a matter of urgency.

The heavy detachments had to be manned and equipped anew, as a considerable proportion of the combat aircraft and many specialists of the old prerevolutionary air squadron had been seized by German troops during the occupation of the Ukraine in the spring of 1918. Therefore, the Northern Air Group was originally very small, having only three Murometses in all, brought by rail from Petrograd to Nizhniy Novgorod.

Carrying out Lenin's instructions, the Revolutionary Military Council

transformed the Northern Air Group into the first Soviet heavy air squadron* in July 1918, and in December of the same year, expanded this squadron into a division† of heavy aircraft. V. M. Remezyuk, a former armored-train commander turned pilot, was appointed commander of the division, which was based first at Lipetsk, then at Sarapul, and, in the final phase of the Civil War, at Orel.

An active role in the forming of heavy bomber subunits was played by A. G. Alekhovich, first test pilot for the Murometses. He met a tragic death in November 1918 while flying one of these aircraft.

The life and combat activity of the new Soviet heavy aircraft squadron depended on delivery of aircraft from the factory. However, the management of the Russo-Baltic Plant repudiated its long-term contracts and under various pretexts delayed the completion of the Murometses already on hand at Petrograd. Moreover, the company tried to sell one of the aircraft to Sweden. In spite of sabotage by enemies of the revolution, prrevolutionary engineers and technicians at the plant and at the division's Sarapul shops rounded up 11 Type G-3 aircraft and engines for them and did the necessary repair work.

During the latter part of 1919, Denikin mounted an offensive in the South and Mamontov's cavalry corps made piratical raids on our rear areas. The Central Committee of the Party, and Lenin personally, took the necessary steps to deal with Denikin and to disrupt the White Guards' plans to take Tula and move forward to Moscow.

Lenin analyzed the situation daily, followed events on the Southern Front, and assigned combat missions to our troops. Clearly recognizing the merits of aviation, the leader of the revolution suggested in a famous memorandum to E. M. Sklyanskiy, chairman of the Revolutionary Military Council, that consideration be given to using low-flying aircraft against cavalry.

The Il'ya Muromets became a formidable force in action against cavalry. Its speed was 100 kilometers per hour, it could carry 20 poods of bombs, and it had several machine-gun positions. Its four engines provided enhanced viability, and it could get back to base safely even when struck in dozens of places by bullets or shrapnel. The Murometses were especially effective at low altitudes.

*[*eskadra*—'squadron.' An early Soviet Air Force formation made up of several detachments containing six to eight aircraft each. The heavy bomber squadron of 1916 had approximately 20 aircraft assigned—U.S. Ed.]

† [*divizion*—'division.' The early Soviet Air Force division consisted of three detachments containing six to eight aircraft each. The present Soviet Air Force division is roughly double that size—U.S. Ed.]

After Lipetsk, which came to be in the frontal zone, the Muromets division was based at Sarapul. In accordance with the new tables of organization and equipment, the division's complement was increased to 750 men. It included three combat detachments, training subunits, an applied-science unit, an aerological station, airfield services, and large assembly-and-repair shops. In contrast to light aviation subunits, which were manned directly from the schools, the division trained aircrew personnel itself, formed combat detachments, and sent them to the front. Two such detachments served as autonomous subunits on the Western and Southern Fronts, while the third was assigned to the Eastern Front for flights on the Sarapul-Yekaterinburg run.

Each Muromets aircrew constituted a combat unit capable of acting jointly with other such units, or independently. A combat detachment originally contained two, and later three, Murometses as well as one or two light aircraft.

In July 1920 Soviet troops on the Western Front went over to the offensive. Red military pilots flying Murometses attacked the enemy in the 16th Army's combat zone. The staff of this army gave a high rating to the reconnaissance and bombardment performance of the Murometses' crews. Several weeks later such aircrews participated actively in repelling the White Poles' counteroffensive, and they helped our ground troops by bombing targets in Bobruysk, at Vereytsy railroad station and Osipovich junction.

Personnel of the Muromets division distinguished themselves on the Southern and Southwestern Fronts in the fall of 1920, fighting against Wrangel's well-equipped and well-armed White Guards.

Veterans of those days will recall the four-engined giants towering majestically over the dozens of light aircraft of various types on the Aleksandrovsk and Sinel'nikov airfields. Operationally these heavy aircraft were initially subordinate to the 2nd Cavalry Army and later directly to the staff of the 13th Army.

The Muromets crews flew reconnaissance missions in the White Guards' rear area and bombed Wrangel's field positions. The pilots and navigators (observers) of the first combat detachment earned renown when they bombed the railroad stations at Fedorovka, Prishib, and Dzhankoy. In one of the raids on the station at Friedrichfeld, our detachment dispersed a parade of troops who were to have been reviewed by Wrangel. During the first half of September, the Murometses flew 16 successful sorties, dropping 108 poods of bombs on the enemy.

In an aerial battle over Prishib, Muromets gunner Fedor Mikhaylovskiy

shot down one of five attacking enemy fighters with a self-aimed burst of machine-gun fire. On 12 October 1920 pilot and party member F. Shkudov and his crew bombed and derailed an enemy armored train near Novoukrainka station. A month before this, the daily newspaper *Izvestiya* had carried an article on a feat performed by Red air force pilot Aleksey Tumanskiy, who, together with his subordinates, had destroyed in a single sortie four of six new British De Havillands which were on the ground at one of Wrangel's airfields.

The commanders of the 13th and 15th Armies reported favorably on the performance of the Murometses on the Southern Front. Order No. 75, dated 24 October 1920, signed by the Chief of the Field Aviation Directorate Sergeyev and by Commissar Kuznetsov, reads in part: "The Air Staff was quite right to entrust the Il'ya Muromets with both military and civil missions. . . . These aircraft have been flown successfully at all hours and in all weather. . . . The entire division demonstrated maximum energy so as to coordinate the overall work of the Il'ya Muromets detachments at the front."

Observer Gorshkov and copilot Kuz'min displayed exceptional courage. Wounded, they proceeded with their mission, and only when it was completed did they return to base. Engine mechanics Kushko, D'yachkov, Nikolayev, and many other division specialists pressed for a place in one of the combat detachments and for duty at the front.

During the Civil War the tactical performance of Soviet heavy aircraft improved constantly. Notwithstanding the lack of trained personnel, shortage of gasoline, low engine reliability, frequent changes of base, and poor ground support, the aircraft designated IM* were nonetheless employed successfully on various Civil War fronts against enemies of the Soviet Republic.

In contrast to light single-seat aircraft which flew mainly above the front line zone and over territory occupied by friendly troops, Soviet heavy aircraft flew 100 kilometers or more into the enemy's rear area, attacking important targets at operational depth. The bombsight and related equipment permitted bombing to be carried out with high accuracy and great effect. Powerful gun armament and a specially designated machine gunner permitted enemy fighters to be successfully repelled.

A course of lectures on employment of the Il'ya Muromets was

* Several variants of the Il'ya Muromets (IM) were produced, types V, G, Ye, and G-3. The latter, with four 760-hp engines, had a disposable load of 90 poods, a speed of about 130 kilometers per hour, a ceiling of about 3000 meters, a crew of five, carried 20 poods of bombs, and was armed with three to six machine guns. A training version of the IM, with dual control, was designated the DIM.

developed for air cadets being trained at Sarapul. As early as 1919 instructor Pankrat'yev and other experienced flyers formulated principles governing the employment of heavy aircraft at the front. Trainees were taught air combat, group flying, coordination with ground troops in defense and offense, and the art of reconnaissance and bombing.

Early combat experience gained with heavy aircraft was given an official character in the first Soviet manuals on employment of aviation and in instructions to aircrews.

The employment of our heavy aviation during the Civil War was not confined to combat functions. As early as January 1918, Lenin wondered whether we had pilots and aircraft capable of reaching Berlin to drop proclamations there. On his instructions a report was prepared on the feasibility of propaganda flights to the capitals of Central European countries. At a meeting of the party's Central Committee on 19 January 1918, one item discussed was the question of sending airmen to Germany to find out the situation, the public mood, and the Kaiser government's intentions.

On the personal instructions of Lenin, our aviation was widely used during the Civil War to scatter leaflets, both at the front and in the enemy's rear area. Even in his first sortie against Mamontov's cavalry, an aviator named Shkudov was assigned the secondary mission of dropping several bundles of leaflets. In military dispatches from the Southern Front, almost every day the Murometses reported having scattered one or two poods of political agitation literature. In 3 years of war, about 9,000 kilograms* of leaflets, brochures, and newspapers were dropped on White Guards and interventionist forces by Red aircraft. A considerable proportion of this political agitation literature was carried to the enemy's rear area by our heavy aircraft.

Many Soviet airmen were cited for valor in the Civil War, some receiving gifts inscribed with their name from the All-Russian Central Executive Committee, others, the most courageous, being awarded the Order of the Red Banner. One of the latter was Muromets pilot A. K. Tumanskiy, who was cited in a VVS dispatch for his bombing exploits against the White Guards. Four aviation units, including both aircrew and ground staff, were presented with honorary revolutionary Red Banners for mass heroism in the Civil War. One such unit was the 51st Heavy Bombardment Squadron.

As early as the beginning of 1918 Lenin agreed with a proposal to set up a committee on aeronautical science and technology, and later

*[1 kilogram equals 2.2 pounds—U.S. Ed.]

seconded Professor N. Ye. Zhukovskiy's motion to found the Central Aerohydrodynamic Institute (TsAGI). The aforementioned committee and institute sought optimum designs for projected aircraft, emphasizing heavy aircraft.

In June 1920 a Heavy Aviation Section was included in the Aeronautical Department of the Main Administration of the Air Fleet. This section was charged with testing heavy aircraft and their equipment, and resolving problems related to the employment of such aircraft in combat. In this same year, with Lenin's consent, work was begun on an experimental airfield which later became the Scientific-Research Institute of the VVS. This facility included a special unit tasked with flight testing heavy aircraft.

In January 1921 Lenin signed a resolution by the Council of Labor and Defense establishing a commission to elaborate a maximum program for the development of Soviet aeronautics and aviation. The first phase of the commission's work was completed in June 1921, when it formulated a three-year plan envisaging 30 additional bombardment detachments with six bombers in each. Also planned were long-range reconnaissance subunits and special-purpose detachments made up of four-engine aircraft. A special section in the commission's report dealing with aircraft production concluded that a requirement existed for a strong domestic aircraft industry capable of supplying our heavy aviation with combat aircraft.

Lenin's pronouncements on the urgent need to develop our own aircraft industry, giving priority to heavy aircraft and taking cognizance of scientific and technological progress, are reflected and given legitimacy in the decisions of the 10th and subsequent congresses of the RKP(b)* and in the resolutions of the August 1922 and other plenums of its Central Committee.

Lenin's concern for the needs of heavy aviation was deep and diversified. He personally participated in a discussion on feeding Muro-mets aircrews, and signed a resolution by the Council of Labor and Defense which stated that "aircrew personnel of the Il'ya Muromets division must be fed according to the standards and in the manner prescribed by Order No. 1765 (1920) of the Revolutionary Military Council of the Republic, whereas all other personnel of the division at the

*[RKP(b)—*Rossiyskaya Kommunisticheskaya partiya (bol'shevikov)* 'Russian Communist Party (Bolshevik)'—U.S. Ed.]

front and in the rear must be fed by the front Food and Ration Committee and the rear area Food and Ration Committee, respectively.”¹

With the return to peacetime, our heavy military aviation was once again required to carry official mail, passengers, and freight on one of our most important domestic air routes.

The first freight and passenger air service between Moscow and Nizhniy Novgorod was officially opened in 1923. However, according to archival documents, newspaper articles, and the recollections of VVS veterans, the Soviet government named the Muromets division carrier of official mail, passengers, and urgent freight between Moscow and Khar'kov as early as the spring of 1921. The route was divided into a Moscow-Orel and an Orel-Khar'kov leg due to its length and was subsequently extended to Simferopol'.

Flights along this route were begun on 1 May 1921. Pilots A. Pankrat'yev, A. Nasonov, and A. Yeremenko and detachment commander A. Tumanskiy covered the route in 7-9 hours, with stops at the intermediate airfields of Tula, Orel and Kursk.

In analyzing the military and civil performance of Il'ya Muromets aircraft, *Vestnik Vozdushnogo Flota* [Herald of the Air Fleet] writes that “the Muromets division is tangible evidence that we are capable of producing our own heavy aircraft without the help of Western Europe. The motherland of heavy aviation is therefore here, not in the West.”

A total of 79 Il'ya Muromets-class aircraft was built in the course of 7 years, including 11 Type G-3 models during the Civil War. The last aircraft of this type were still flying in the early 1920's, so the world's first heavy bomber had a quite appreciable life span.

A view shared by the well-known Professor V. S. Pyshnov is that, in terms of its flying characteristics and reliability, the Il'ya Muromets was an outstanding phenomenon for its time. Four or five years elapsed following the first flight of our Muromets before comparable aircraft appeared abroad.

With a view to further development of Soviet heavy aviation, the Commission for Heavy Aviation (KOMTA) was established in April 1919 with Lenin's knowledge and consent. It included the eminent scientists

¹ TsGA IML pri TsK KPSS [Tsentral'nyy gosudarstvennyy arkhiv Instituta marksizma-leninizma pri Tsentral'nom Komitete KPSS 'Central State Archives of the Institute of Marxism-Leninism of the Central Committee of the CPSU'], folio 19, list 3, file 224, sheet 307.

N. Ye. Zhukovskiy, B. N. Yur'yev and V. P. Vetchinkin, aircraft designers, and aviators from the Il'ya Muromets division.

In early 1920 the Main Administration of the Air Fleet sought the approval of the Commission for Heavy Aviation to proceed with a flying laboratory capable of conversion, without major alterations, to the role of heavy bomber. Specialists at the Muromets division had already made a draft design of the new aircraft, and had made its aerodynamic calculations. Making a few adjustments, the commission gave working drawings and an order to the division's Sarapul shops in the fall of 1920. It took about 10 months to build the new aircraft, a triplane named KOMTA (with three rows of wings, one above the other). In the fall of 1921, the new aircraft was transported from Sarapul to Moscow, where it was adjusted and propellers were manufactured for it.

In order to resolve the problem of maneuverability, the aircraft designers of those days resorted to additional wings and control vanes. For example, a Muromets with three rudder fins and three underhung rudders was built at the Russo-Baltic Plant. One designer even designed a heavy aircraft with four rows of wings.

The KOMTA triplane weighed 2,700 kilograms empty. With two 240-hp engines, it had a design speed of 140 kilometers per hour and 4 hours' endurance. However, after a few brief test flights performed by division commander Remezyuk and others at Moscow's Khodynskoye Field, it became clear that the power of the two Fiat engines was inadequate and that the aircraft's aerodynamic and technical characteristics were not good. Accordingly, the KOMTA never went into series production, even though at the time the triplane concept was highly thought of abroad. However, work on the "flying bookstand," as the triplane was jokingly called by airmen, enriched the practical experience of the young Soviet designers, engineers, and specialists, obliging them to seek alternative models and obviating many errors for the future.

Heavy aviation awaited more modern combat aircraft from the designers. The eminent VVS marshal and theorist A. N. Lapchinskiy wrote that "our strongly forged aircrew contingent has long since outgrown its equipment and has earned the right to aircraft which it can trust."

After the Civil War, the Higher Aviation School for Aerial Combat and Bombing at Serpukhov was expanded by the addition of an aviation detachment which received four Il'ya Muromets aircraft. The Serpukhov instructors trained young observers, navigators, and bombardiers in one of these aircraft, the one in the best state of repair, and in some multiseat Vickers Vernons. The year 1923 saw the last flight of an aircraft from the

famous Muromets family, which for many years had been the world's standard for heavy aviation.

The August 1922 Plenum of the Central Committee of the RKP(b) authorized the Treasury to allow the War Department 35 million rubles in gold for the development of aviation, 20 million budgeted for calendar year 1922 and the balance payable not later than 1 April 1923. The Society of Friends of the Air Fleet played an important role in making the public enthusiastic about aviation development.

When use of the Muromets for training purposes was discontinued, the Revolutionary Military Council took the necessary steps to retain the flying and technical expertise of the former Muromets division. One unit was assigned to the Serpukhov school, and many of the division's personnel were assigned to a heavy aircraft detachment, based first at Moscow and later at Gatchina. In 6 months, formation of a second subunit equipped with foreign-built heavy aircraft was completed.

Our young aviation needed new aircraft. Accordingly, consideration was given in 1924 to a bid by a British firm for the design and manufacture of a modern heavy bomber for the VVS. However, the Englishmen imposed patently unacceptable conditions, namely, 500,000 rubles in gold, and a year and a half for the design work alone. The Soviet government declined the tendered foreign "services." The order for the new aircraft was placed with the Central Aerohydrodynamics Institute for the attention of a collective headed by A. N. Tupolev. The Soviet designers, airframe engineers, and working-level enthusiasts completed the assignment in record time. They designed and built the bomber in 9 months, at a cost of just 40 percent of the sum bid by the British firm.

Actively supporting our own scientists and aircraft designers, the Central Committee of the party and the Soviet government instructed the Revolutionary Military Council and the Higher Council for the National Economy to pay special attention to our production of heavy aircraft. F. E. Dzerzhinskiy was a big help to those producing the new aircraft, persistently striving, as he said, "to put Soviet aircraft design on a firm footing." Organizing this important and complex matter, the party also took cognizance of N. Ye. Zhukovskiy's advice that, in matters related to the design and production of new aircraft, we should proceed advisedly and with purpose.

The real possibility of building heavy aircraft of high strength and gross weight emerged in our country with the advent of our own Kol'chugino brand of duralumin. Thanks to this early breakthrough in Soviet nonferrous metallurgy, the heavy bomber design teams obtained the material

base for the realization of their bold innovations and uncommon ingenuities. This applied in particular to the team of heavy aircraft design enthusiasts which was led and united by a pupil and colleague of Zhukovskiy, the energetic organizer and talented designer A. N. Tupolev.

A new stage in the development of our heavy aviation began in November 1925 when the Central Aerohydrodynamic Institute's ANT-4 first rose into the air. It was flown by a crew under the command of A. I. Tomashevskiy. In 1929 a variant of this heavy bomber known as the TB-1 went into series production. The first aircraft in this series were assigned to the school at Orenburg, where training of pilots and navigators for heavy aviation line units began. In the course of several years, more than 200 of the TB-1 variant were manufactured. They became the main aircraft pool for the newly created heavy squadrons and brigades.

The TB-1 heavy bomber heralded a qualitative jump in VVS equipment. By virtue of a highly successful combination of critical characteristics, this model dominated the development of our bomber aviation for almost a decade.

The TB-1 had a fuselage more than 17 meters long and a wingspan of almost 30 meters. With a takeoff weight of 7.8 metric tons, it could carry a 3.5-ton payload. Its speed was almost 200 kilometers per hour and it had a ceiling of 5 kilometers.

VVS personnel versed in the operation and maintenance of the TB-1 heavy bomber welcomed with great enthusiasm the announcement that its designer, A. N. Tupolev, had been awarded the Order of Labor's Red Banner by the Presidium of the Central Executive Committee for his contribution to Soviet aviation. In public recognition of the service rendered by the Central Aerohydrodynamic Institute in producing a heavy bomber prototype, the same honor was conferred on Professor S. A. Chaplygin, institute director.

Having recognized the services of the heavy aircraft producers, the party made new and greater demands of them. When it had established the content of the next 5-year plan, the 16th All-Union Party Conference committed the aircraft industry and the Red Army command to a substantial buildup of our bomber aviation. The specific requirement was met ahead of time. Within 5 years (1928-1932, inclusive), whereas the total number of aircraft at the disposal of the VVS increased by a factor of 2.7, the number of heavy bombers increased sevenfold.

The work of our scientists, aeronautical engineers, and aircraft designers was closely watched abroad. The design bureaus and aircraft firms of the principal capitalist powers adopted a great deal from Soviet

experience, especially in the field of multiengine all-metal monoplanes. Boeing, a leading American company, even went so far as to copy a Soviet bomber design.

Meanwhile, our scientists and engineers developed rocket-assisted takeoff for the TB-1 heavy bomber, and later used a parachute to shorten its landing roll. Suspension of two I-4 fighters under the wings of a TB-1 was a sensational achievement which increased the fighter's range considerably. The later model TB-3 repeatedly took off with four suspended fighters (and, in one instance, even with five), which cast off from the "mother ship" in the combat zone. Test pilots V. P. Chkalov and A. F. Anisimov displayed superb skill in these flights. VVS Scientific Research Institute pilot V. A. Stepanchenok "landed" a fighter on a TB-3 heavy bomber in flight, this being the first such "landing" in the history of world aviation. These successful experiments permitted Tupolev's aircraft to be used for transporting fighter aircraft to remote theaters of operations in the fall of 1941.

The first Soviet "flying fortresses" were manned by cadres dedicated to the nation and to the socialist regime. At the call of the Communist Party, hundreds of its members poured into the ranks of the Soviet Air Force to storm the skies in heavy aircraft. The Leninist Komsomol [Communist Youth League] sent thousands of young patriots into our bomber command. ODVF [Society of Friends of the Air Fleet, 1923-1925], Aviakhim [Society for Assistance to Aviation and Chemical Construction of the USSR, 1925-1927], and Osoaviakhim [Society for Assistance to the Defense, Aviation and Chemical Construction of the USSR, 1927-1948], together with the Communist Youth League's patronage of the Red Air Fleet, attracted young people to air force-oriented recreational activities. Soviet youngsters enthusiastically acquired the skills possessed by pilots, navigators, radio operators, aerial gunners, technicians, and mechanics. As long ago as the 1932 May Day Parade on Moscow's Red Square, the flyby included 90 TB-1 bombers and one squadron of TB-3 heavy bombers. At the controls and in the cockpits of these powerful multiengine aircraft were the young wards of the Party, alumni of the Communist Youth League, and representatives of Osoaviakhim.

In 1930 Tupolev's team produced a new landplane, the giant TB-3. The heavy all-metal monoplane had four M-17 engines and a wingspan of 40 meters, and for a gross weight of 15 tons it had a speed of 200 kilometers per hour. Later, with four AM-34 engines, its takeoff weight exceeded 20 tons and its speed reached 280 kilometers per hour. In those days, no aircraft in the world (with wheeled undercarriages) other than the TB-3 could take off with a 5-ton bomb load.

An example of the excellent specifications of our TB-3 heavy bomber was its load ratio, i.e., its payload expressed as a fraction of its gross weight. For the best German bomber, the Ju-88, this ratio was 0.333, whereas for the TB-3 it ranged from 0.386 to 0.460.

The new TB-3 bomber, with its fine instruments, could be used to train its crews in night flying. Accordingly, those in command of units and subunits equipped with Tupolev aircraft, aware of the importance of round-the-clock combat readiness of heavy aviation, first arranged for their instructors to be trained in night flying and then performed night flights routinely.

In the early 1930's, VVS units in the Transbaykal and the Far East began to be equipped with heavy bombers. Scores of crews commanded by such experienced pilots as A. S. Shestakov and F. S. Shirokiy flew their bombers across the entire country to the Far East Maritime District. In a short time they covered a route which, a few years before, had been traversed only by aces specializing in long-distance flights. Such cross-country flights and the combat training of line units repeatedly confirmed the great capabilities of the new Soviet heavy aircraft.

The advent of the TB-3 heavy bomber brought an end to seasonal restrictions on flying, thus permitting year-round combat training, which became a more rhythmic and uniform process. The fact that the cockpit was completely enclosed ensured its habitability even at low outside temperatures, thus enhancing aircrew performance. Given suitable snow conditions, the heavy bomber's ski undercarriage permitted it to take off even from field airfields or temporary landing strips.

As far as winter flying is concerned, our heavy bomber crews benefitted from the experience gained by the first Heroes of the Soviet Union when they rescued Chelyuskin and his party, when they landed on ice, and when they flew in the vicinity of the North Pole.

Its participation in the penetration of the endless Arctic wastes was an illustrious page in the history of our heavy aviation. Today's Soviet airmen are proud that those daring and difficult expeditions were inspired by Lenin himself in the earliest days of the Red Air Fleet.

The plans for an Arctic expedition and the proposals of the Northern Air Group were not implemented until the 1930's. A leading role in aeronautical Arctic exploration and in the development of high-latitude navigation methodology was played by V. Chkalov, M. Gromov, M. Vodop'yanov, A. Mazuruk, and scores of other courageous and capable pioneers of the northern air spaces. Epics such as record-breaking flights across the Pole to the U.S., the rescue of Chelyuskin's party, and the

landing of the valiant Papanin foursome on the ice near the North Pole all entered the annals of our heavy aviation, thus becoming the property of future generations of airmen.

The experience gained by the pioneers of these regions was also taken into account in the postwar years, when the need arose for flights in the Soviet Arctic. Since the 1950's, the crews of our jet aircraft have flown successfully at high latitudes, above the boundless ice fields of the Arctic Ocean.

The Communist Party's policy of industrializing our country and creating our own aircraft industry was brought to fruition.

People's Commissar of Defense Voroshilov reported to the 17th VKP(b)* Congress in 1934 that the ratio of the total number of aircraft in the VVS contributed by heavy aviation had doubled in 5 years. During the next five-year plan, the speed, ceiling, and range of our long-range bombers increased by 70, 77, and 61 percent, respectively.

The heavy bombardment brigades had more than 800 TB-3 heavy bombers, but the VVS needed a new, faster, long-range bomber. Such an aircraft was designed by a special bureau under the leadership of S. V. Il'yushin. By the end of the 1930's, operational units of Long-Range Aviation (DBA) began to receive various models of the TB-3 heavy bomber. The final one, designated the Il-4, became the basic aircraft of DBA. The Il-4 had two M-88B engines of 1100 hp each, which gave it a speed of 445 kilometers per hour.

The basic unit of heavy bomber aviation was originally the approximately 50-aircraft brigade, made up of three or four squadrons. A few years later, such brigades were united into air corps capable of performing assigned missions independently, and capable of participating in front operations. During the period 1936-38, three Special Purpose Armies (AON) were formed, these being the highest formations of strategic aviation constituting the High Command's reserve.

Leaders of formations and units at that time included Corps Commander V. V. Khripin, commander of the 1st Special Purpose Army; Division Commander M. V. Maslov, commander of the 17th Heavy Bomber Air Brigade; A. S. Khudyakov, in 1936 deputy chief of staff of the 5th Heavy Bomber Air Brigade, subsequently Marshal of Aviation; A. V. Nikitin, chief of staff of the Heavy Bomber Air Corps; and Colonel V. A. Sudets, commander of the 4th Bomber Corps, subsequently

*[VKP(b)—*Vsesoyuznaya Kommunisticheskaya Partiya (bol'shevikov)* 'All-Union Communist Party (Bolshevik)'—U.S. Ed.]

Marshal of Aviation. Our heavy aviation also nurtured N. F. Naumenko, S. D. Rybal'chenko, I. S. Polbin, and many other honored airmen who distinguished themselves in combat against enemies of our homeland. At one time commander of an air detachment of a heavy brigade, S. P. Andreyev became a general, as did K. V. Ivashchenko, chief engineer of a Heavy Bomber Division. Exemplary mastery of the TB-3 heavy bomber was displayed in the mid-1930's by Army Commander Ya. I. Alksnis, Chief of the VVS.

In late 1937 the Central Committee of the VKP(b) and the USSR Council of People's Commissars jointly ratified a five-year developmental plan for Long-Range Bomber Aviation during the years 1938-42. However, Hitlerite Germany's attack on us interfered with its implementation. Our DBA corps and divisions entered the war with a large number of obsolete aircraft.

Throughout the entire existence of Soviet heavy aviation, the best scientists and engineers have participated in the theoretical and practical aspects of the navigational problems associated with "blind flight," evolving a methodology and the requisite equipment. Our heavy aviation could not have become all-weather or long-range without such research and development.

The dead reckoning method was first used in our country. It was successfully employed as an independent air navigation method by the Murometses as early as World War I and the Civil War.

Important contributions to navigation theory, navigator equipment, and bomber instrumentation were made by A. I. Zhuravchenko, V. G. Nemchinov, P. A. Domogarov, S. P. Sergeyev, S. A. Nozdrovskiy, and other experienced aviators and prominent scientists.

The Central Executive Committee's resolution of 28 September 1934 concerning the 75-hour nonstop flight of pilot M. M. Gromov and navigator I. T. Spirin praised the scientists and navigators who made such pathfinding possible. Even at that time, many airfields used by heavy bomber aviation had radio beacons operating either in the bearing mode or in the "lost signal" mode (for homing on the "beam of silence").

The period 1932-36 saw the emergence of hyperbolic and circular radio navigation systems in our country. Equipment was designed at that time to facilitate landing approach when the ground was not visible. As early as 1933, VVS test pilots flew TB-1 bombers under adverse weather conditions. Two years later Yegorov, commander of a special blind-flying squadron, flew a TB-3 bomber precisely along a 1000-kilometer route above the clouds, and then using instruments only, landed on a suburban

Moscow airfield. At no time during the flight could the aircrew see the terrain below the bomber, because the cockpit was sealed and the curtains were drawn.

Factors which have contributed to the successful navigation of our heavy bombers on full-radius missions include the excellence of the original instructors, introduction of the Navigator Service into long-range aviation units, and publication of regulations of blind flying. Unit command personnel had their qualifications upgraded at district centers for blind-flying instruction and in two higher schools where trainees could assimilate the experience of I. T. Spirin, S. A. Danilin, G. M. Prokof'yev, B. V. Sterligov, A. I. Belyakov, A. M. Bryandinskiy, M. Kh. Gordiyenko, and other outstanding Soviet navigators.

Even in those days, Long-Range Aviation aircrew personnel were adept at dropping assault forces. S. K. Rudenko (now Marshal of Aviation) writes that in the summer of 1931 he was one of a group of students from the N. Ye. Zhukovskiy Air Force Academy sent for practical training with an air brigade equipped with TB-1 bombers. As an exercise, a squadron under the command of N. P. Kretov participated in moving troops from Leningrad to Kiev. The drop of a parachute assault force on Gatchina by the aforementioned squadron was observed by M. I. Kalinin, S. M. Kirov, and G. K. Ordzhonikidze.

Maneuvers in which dozens of Soviet heavy bombers dropped an assault force were conducted in 1934. In 1936, during maneuvers in Belorussia, such bombers airlifted an entire rifle division at once, with armored cars and field guns slung beneath the aircraft. Perfecting this technique, Long-Range Aviation in essence brought a new branch of aviation into being, military transport aviation.

A severe test for pilots, navigators, and engineers from heavy bomber units was their participation in air shows. As is well known, the flyby over Moscow on 1 May 1918 consisted of only one aircraft, a Nieuport XXI. Its pilot, I. N. Vinogradov, was assigned the mission. Taking off from suburban Khodynskoye Airfield, he was to proceed to the vicinity of Red Square and drop leaflets. Eighteen years later at Moscow's May Day parade in 1936, about 1000 aircraft participated in the flyby, including several hundred heavy bombers. They flew in from bases hundreds of kilometers from Moscow. Even today one cannot help being proud of those thousands of airmen who, with precision and skill, flew that miles-long armada over Moscow's Red Square.

In the prewar years the Soviet people, true to Lenin's principles of proletarian internationalism, selflessly rendered aid to the workers of Spain in their campaign against Franco's fascist insurgents and also to the

people of China against the Japanese interventionists. Scores of Soviet airmen voluntarily helped repel the aggressors.

For heroism in combating the Japanese aggressor, O. N. Borovkov, assistant to the commander of the 21st Long-Range Bomber Air Regiment, was awarded the title Hero of the Soviet Union and scores of other DBA airmen were decorated with orders and medals.

In those prewar years, our heavy aviation repeatedly withstood the test in other confrontations with enemies of our homeland. So it was in August 1938 when our ground troops with air support impressively repulsed the Japanese invaders who had violated the Soviet frontier near Lake Khasan. There the 1,000-kilogram bomb, never before dropped by a TB-3 bomber, was used with devastating effect against the enemy's defensive structures. Thus, our heavy aviation played an important role in expelling the Japanese force of provocateurs from Soviet soil.

In the summer of 1939, Japanese troops invaded the land of our ally Mongolia and conducted large-scale operations in the vicinity of the Khalkhin-Gol River. It was in this area that our bombers, including some heavy bombers, made accurate strikes against the Japanese forward positions and rear area reserves in early August. Enemy command and observation posts were destroyed, troop control was disrupted, and communication centers were put out of commission. The raids of the TB-3 night bombers contributed to the physical exhaustion of the Japanese troops and sapped their morale.

In the Khalkhin-Gol campaign, A. A. Yuyukin, commissar of the 150th Air Regiment, performed a heroic feat. He flew his burning aircraft into the Japanese earth-and-timber pillboxes. At his order, the crew bailed out. One of his subordinates was none other than Nikolay Gastello, future hero of Long-Range Aviation and spiritual successor of Yuyukin during the Great Patriotic War.

Only a few months had passed when a new and severe trial befell many Soviet airmen. Through the fault of Finnish provocateurs prompted by international reaction, war broke out.

Five regiments from Long-Range Bomber Aviation took part in the war of 1939-40 on our northwestern frontier. In that campaign against the White Finns, special credit is due our aircrews who valiantly fulfilled their combat missions in the face of fierce fighter resistance and who were given permission to fly even under the most adverse weather conditions. Also deserving of recognition were our ground crews, who serviced and repaired our aircraft at temperatures reaching 40 below zero.

The 6th, 21st, 42nd, and 53rd Long-Range Bomber Air Regiments distinguished themselves in their bombardment of Finnish airfields, artillery positions, war plants, ammunition dumps, and fortifications on the Mannerheim Line.

Red Army Captains V. Dryanin and Ye. Seregin personally made sniperlike raids against the White Finns' fortifications, as did Senior Lieutenants I. Vorob'yev, K. Denisenko, and S. Ushakov. Such strikes were also made by the subordinates of officers Novodranov, Mikryukov, and Men'shikov. Many airmen from long-range bomber units were decorated with orders and medals for distinguished service in the Finnish campaign. Captains I. Balashov and Ye. Fedorov and Junior Lieutenants A. Markov and F. Lopatin were awarded the title Hero of the Soviet Union for their skillful employment of equipment and weapons and for personal courage.

After the war with the White Finns, which was waged under severe weather conditions, more attention was paid to training aircrews to fly in adverse meteorological conditions. In this important matter, great credit is due to the 212th Long-Range Bomber Air Regiment, commanded by Lieutenant Colonel A. Ye. Golovanov. At the outset, the Noch'-1 instrument landing system was mastered by subunit command personnel, who then imparted their knowledge to their subordinates. In the fall of 1941 their experience was shared with the air units of the 81st Long-Range Bomber Division and of other DBA formations.

Chapter 2. Long-Range Aviation in the Great Patriotic War

Early on the morning of 22 June 1941 all air crew personnel of Long-Range Bomber Aviation, aroused by the alert klaxon, took to the air. Within a few hours the 207th Long-Range Bomber Air Regiment mounted an attack on German tanks and motorized infantry near Brest, wiping out two companies of infantry and putting several dozen tanks and motor vehicles out of commission. Next morning the fascists were bombed even more successfully, but our air force also suffered losses. These were due primarily to the fact that, although the TB-3f was considerably inferior to the Messerschmitt-109 in speed and maneuverability, our bombers operated in the daytime without fighter cover. Due to losses sustained by aviation assigned to the Belorussian Military District on the first day of the war, the enemy gained numerical superiority.

Notwithstanding the enemy's numerical superiority, personnel from DBA units, and those of the 207th Air Regiment in particular, displayed exceptional courage and dedication. This was exemplified by squadron commander Captain Gastello, whose aircraft sustained two direct hits when penetrating a screen of antiaircraft fire on 24 June 1941. Nonetheless, Gastello's crew successfully completed their bombing mission and photographed the results achieved by all the unit's crews. Once again over friendly territory, it would have been permissible to abandon such a badly damaged aircraft, but in the hope of saving his seriously wounded navigator, Captain Gastello took the risk of flying back to base, where he adeptly landed his virtually uncontrollable aircraft.

Nikolay Gastello's next encounter with the enemy took place under unusual circumstances. On the morning of 25 June 1941 an enemy reconnaissance aircraft appeared at low altitude over the 207th Long-Range Bomber Air Regiment's airfield. A minute before, hearing the strange hum of its engines in the clouds, the squadron leader gave the order, "Board your planes! . . . Man your guns!" so that when the enemy scout approached to strafe our parked bombers, it was hit by machine-gun fire, lost altitude, and crashed in a meadow beyond the airfield.

The events of the next, the fifth, day of the Great Patriotic War entered not only the history of Long-Range Aviation, but also the annals of the Soviet Air Force as a whole. That date, 26 June 1941, will always be associated with the heroic feat of Captain Gastello's crew and is observed as the day of his immortal victory over the enemy, as the threshold of his eternal fame.

On that day, the navigators directed their aircraft to the target with precision. Along the group's course was a grey, snakelike column of fascist tanks, motor vehicles, and artillery following the bends in the Molodechno-Radoshkovichi road.

Veering his squadron to starboard, Captain Gastello assumed an approach course slightly inclined to the road. For the best part of a minute, the interval needed by the navigator for aiming and timing purposes, all aircraft maintained course and speed, keeping precisely in formation. The squadron leader held the stick tightly. All bombs would be released at his command. Then a devastating burst rent the air. The bomb volley destroyed dozens of motor vehicles, hurled artillery pieces from the road, and overturned several tanks. It was as if a fiery squall had swept across the highway. Captain Gastello's squadron soon disappeared over the horizon. Ten kilometers from the road the squadron turned about, dropped to an altitude of 400 meters, and once again approached the enemy column in tight formation, this time strafing it with machine-gun fire. However, just as the squadron was about to depart the target area, the lead aircraft was suddenly fired upon by a camouflaged roadside battery of quadruple Oerlikon anti-aircraft guns. The trajectories of several guns intersected on Captain Gastello's aircraft, which sustained a series of hits. A stream of fuel from a punctured tank began to spread over the right wing, which was soon enveloped in a sheet of flame.

Sizing up the situation, Captain Gastello radioed his wingmen. "I'm out! Deputy, take over! Everyone go home!" he said and immediately pushed his stick forward. The squadron commander watched the squadron pass over him. Then, an abrupt movement with the ailerons, a bank and recovery, another bank and recovery, and then a reversal of direction with sideslip. Although the aircraft was in flames, it still responded to the controls and its engines produced good thrust.

When his aircraft is on fire, the seconds at a pilot's disposal for decision-making seem shorter than usual. Noticing that the smoke from the burning vehicles below was drifting toward a nearby woodland, Captain Gastello realized that those woods could provide cover for his navigator, radio operator, and gunner if they jumped. He promptly gave the order, "Crew, bail out! I'm going to ram!" Like an instantaneous echo, the navigator answered "I'm staying with you!" The radioman and

gunner came right back in unison, "We're with you too, Captain!" The order was repeated, "Everyone bail out!" Again, "We're staying. . . ." Soon the red star bomber, submitting itself to the pilot's will, altered course, went in a straight line for a few seconds, and then nosed into a dive. . . .

The ensuing explosion sounded like a protracted thunderclap, and its shock wave flattened the Germans who were clearing the road. Half a kilometer away, at a site of a mobile refueling point, a huge flame shot up, enveloping enemy tank trucks and combat equipment as well as German officers and enlisted men clad in mouse-colored uniforms. And skyward, toward the sun, rose a seething, fiery column. . . .

The Soviet Information Bureau's communication reporting award of the title Hero of the Soviet Union to Captain Nikolay Frantsevich Gastello and describing the heroism of his crew became part of the heritage of our airmen, ground troops, and nation. Pilots, navigators, aerial gunners, and technicians read and reread the accounts of the exploit in newspapers, then in short supply at front-line airfields, passing copies from hand to hand and taking them along on combat missions.

Throughout the Great Patriotic War, and especially at its onset, Captain Gastello's exploit had a profound influence on our airmen and on representatives of all branches of Soviet troops, for that matter. Following Gastello's example, thousands of servicemen deliberately sacrificed themselves in order to contribute to the destruction of the hated enemy.

For example, on 5 July 1941 the 53rd Long-Range Bomber Air Regiment performed a collective exploit during a river-crossing operation in the vicinity of Borisov. When one of his supporting bombers caught fire, lead Senior Lieutenant Krymov ordered the pilot, Lieutenant A. I. Bulygin, and his Komsomol crew to bail out. However, Bulygin replied, "I'm going to ram!" and directed his burning bomber into the midst of the enemy's river-crossing operation. He and his subordinates V. Kolesnik, N. Titov, and P. Kusenkov, at the cost of their lives, considerably delayed the enemy's crossing of the Berezina River, thereby giving our ground troops the time they badly needed to consolidate their defense on the new line. A few minutes later, following Bulygin's example, another bomber pilot from the same regiment, Captain S. D. Kovalets, crashed into a column of German tanks leaving Borisov via the Tolochin road.

So the 53rd Air Regiment performed two ramming exploits in a single combat sortie, almost simultaneously! By these two unparalleled feats, members of the party and the Komsomol were united in immortality as patriotic Soviet heroes! After only 14 days of war, four such feats had already been performed by personnel from Long-Range Aviation. By October 1941 the list of Gastello's heroic successors had doubled. It

properly included Junior Lieutenant I. T. Vdovenko and his navigator, the squadron's Komsomol leader N. V. Gomanenko, who crashed with their bomber in an attempt to disrupt the enemy's crossing of the Dnepr, for which they will be forever listed on the roster of the Air Regiment "X" by order of the Minister of Defense. In October 1967 grateful residents of Dnepropetrovsk erected a monument to them in a park on the bank of the Dnepr.

Among those who emulated Captain Gastello were Lieutenant Dmitriy Tarasov, his navigator B. Yeremin, his radioman-gunner B. Kapustin, flight commander Senior Lieutenant A. Markin of the 455th Air Regiment, Senior Lieutenant N. Shishov, Junior Lieutenant V. Korotkov and his crew, and many other fearless patriots.

All through the war the targets chosen by Gastello's emulators for their suicidal attacks included enemy forces and facilities such as parked aircraft, river-crossing operations, fortifications, artillery batteries, ships, and headquarters. The number of Gastello's emulators, his adopted brothers in immortality, grew at Moscow and Stalingrad, on the banks of the Neva and Dnepr, and in the skies above the Baltic area and Belorussia. Those ramming attacks were made at the dictates of heart and mind, being inspired, on the one hand, by ardent love of country and bitter hatred of the occupiers and, on the other, by a rational readiness to give one's life in exchange for many enemy fatalities. Gastello's emulators were not necessarily doomed. As a rule, those airmen could have saved themselves by bailing out of their damaged or burning aircraft, but they chose to remain and carry out their fiery rammings.

Cases are even known of rammings in midair by DBA crews. One such event occurred in October 1941 when Captain Getman, utilizing his Il'yushin bomber's excellent flying properties, sent an enemy fighter to its doom by striking it with his wing.

Regrettably, even today, 27 years after the victorious conclusion of the Great Patriotic War, the telling of its story is far from complete. The archives of the war years have not yet yielded all the records of heroic deeds performed by those patriots who, like Gorkiy's Danko, illuminated the way to victory.

According to data which are still incomplete, the feat performed by Long-Range Aviation's exemplary trainees Captain Gastello and his crew was repeated more than 200 times during the years of our campaign against German fascism and Japanese imperialism. The VVS, Naval Air Force and PVO* pilots, and other aircrew personnel who became the heroes of these exploits numbered more than 300 in all.

*[PVO—*Protivovozdushnaya oborona* 'Air Defense'—U.S. Ed.]

The ramming exploits of Gastello, Vdovenko, Tarasov, and their emulators in Long-Range Aviation units had one very important feature in common. Each ramming exploit was a collective effort. The performer and hero of such a feat was not a lone individual, but a crew of three or four, i.e., a combat subunit. The collective nature of the Gastello-inspired ramming exploits enhances their sociological significance considerably.



Monument at the site of the feat of Captain N. F. Gastello and his crew.

By remaining with their commanders in damaged or burning aircraft, all members of these aircrews gave an example of collective valor and fidelity to their oath of allegiance. Each subordinate of Gastello, Vdovenko, and Tarasov demonstrated his aspiration to act as a member of the collective until the very last instant, to be with his commander at the moment of life's supreme trials.

Our nation glorifies the pilot Nikolay Gastello because, in a critical situation, he had the convictions and the courage to inflict a devastating blow upon the hateful invader at a time when our motherland was in mortal danger. However, still greater credit is due to Captain Gastello as a commander who inspired his men to follow him, having trained them to be patriotic, high-principled servicemen, protectors of our socialist order, confident of ultimate victory, and ready to lay down their young lives for its sake.

And they were not mistaken. At the Victory Parade in June 1945, among the 200 Nazi standards abased before the Lenin Mausoleum in Red Square was that of Guderian's tank division, which had been the target of Gastello's ramming attack on 26 June 1941. And on 26 June 1971 on the occasion of its 30th anniversary, hundreds of the Soviet citizens for whose sake Captain Gastello and his crew had laid down their lives gathered at the monument to the crew. Pioneers from a local school named after the hero brought roses to the monument.

Folklore has it that the rose is a symbol of unfading beauty, a symbol of perpetually blooming life. However, the laying of such flowers at the foot of Gastello's monument was doubly symbolic. On his last mission, the immortal squadron commander had the call sign Rose. . . .

In the fall of 1941, the situation on the Western Front which shielded Moscow was especially tense. All Long-Range Aviation personnel realized the great importance of our capital city as a symbol of the invincibility of the Soviet state, although they were then unaware that, long before his attack on the USSR, Hitler had organized special teams of hangmen for the execution of Muscovites. Moreover, Hitler was impatient to ratify the ceremonial for the entry of his occupation forces into Moscow, and for his own appearance in Red Square on a white horse. The intentions of the Nazi cannibals also included flooding the Soviet capital by causing the Volga River to overflow its banks. The frenzied Fuhrer was so sure of the success of Operation "Barbarossa" that even prior to the outbreak of the war he had ordered carefully selected marble and granite blocks to be brought from fascist-occupied countries for a gigantic monument to honor the taking of Moscow and the defeat of the Soviet Armed Forces. However, the Soviet people thwarted the planned "march to the East." Ironically, a few years later that very granite was used for the facade of 9 Gorkiy Street in our capital.

The Party's radio appeal to the Soviet people on 3 July 1941 gave all our airmen a clearer understanding of the justness of our cause and the nature of our armed conflict with Hitlerite Germany. Moreover, it made them more fully aware of the enormity of the fascist threat and more determined to master their missions in defense of the motherland.

The first stage of the battle for Moscow was already under way in July 1941, when the enemy was a few hundred kilometers away, on the distant approaches to our capital. On 23 July 1941 the 3rd Long-Range Bomber Air Corps rendered active air support to Western Front ground forces concentrated near the town of Roslavl' for a counteroffensive in the Smolensk sector. The bombers caused considerable damage to the enemy near Roslavl', Belyy, and Yartsevo. During the period 29-31 August 1941, in accordance with a directive from Supreme High Command General Headquarters, the 3rd Long-Range Bomber Air Corps joined with other VVS formations (450 aircraft in all) in a counterattack mounted by Bryansk Front ground forces in the Trubchevsk and Novgorod-Severskiy area. Flying three to five sorties a day, crews from the 42nd and 52nd Long-Range Bomber Divisions systematically bombarded the Moscow-bound tanks and motorized infantry of the enemy's 2nd Tank Group. In only 2 days, losses sustained by the enemy as a result of VVS actions amounted to 100 tanks, 20 armored cars, a fuel dump, and several dozen fighter aircraft. Long-Range Aviation units played an effective part in preventing the enemy from realizing his intention of a prompt breakthrough to Moscow.

The Smolensk defensive engagement, the stubborn resistance of Soviet ground troops in other sectors of the front, the support of such resistance

by a weakened, but quite viable, Long-Range Aviation, and the efforts of all VVS units as a whole—all of this combined to prevent the enemy from taking Moscow as Hitler and his General Staff had planned.

On 16 September 1941 the German field forces received a new directive, Operation "Typhoon," whereby three powerful tank groupings from the Dukhovshchina, Roslavl', and Shostka areas were to break through our defenses. Our main forces on the Western, Reserve, and Bryansk Fronts were then to be surrounded in the environs of Vyaz'ma and Bryansk. After this, a ground force was to attack Moscow from the west, while motorized and tank formations were ordered to squeeze the city "in pincers" from the north and south.

During September and October 1941 wave after wave of Guderian's tanks passed through Yukhnov, breaking through our defenses like a battering ram and getting ever closer to Moscow. Having considerable numerical superiority, the Hitlerites kept pushing forward. The thugs were already looking forward to the delights of leisure in the Soviet capital, which according to their Fuhrer had to fall before winter. Advancing toward the front line in fog and rain, the German tankers and prime mover drivers played rousing Prussian marches on their harmonicas during the rest stops, thanking God for the overcast skies. They still believed Goebbels' propaganda that our experienced pilots and the best part of the air force had been wiped out during the first days of the war. They thought our young pilots would be grounded by the low ceiling, knowing that distinguished German aces reporting directly to Reichsmarshal Goering himself would not fly in such weather.

However, at this very moment dozens of red star heavy bombers, which had taken off from suburban Moscow airfields were hedgehopping along the Minsk, Kiev, and Kaluga roads. Their mission was to strike the enemy's operational reserves and to delay the advance of his second echelon troops toward our capital.

At times the silhouettes of the twin-engine Il'yushins were hidden by torn grey clouds and by wisps of a fog that lay slightly above the ground. The long needle on the Il'yushin altimeters often hovered near the 50-meter mark.

Hedgehopping demands great skill and courage of the pilot and navigator, of all aircrew personnel. Like the film in a movie camera, a panorama of the locality approached the aircraft at a speed of 70-80 meters per second and, in the twinkling of an eye, passed beneath it. The low altitude and the grey autumn weather limited the field of vision and made it more difficult for the navigator to find his target. The unevenness of the terrain, and the presence of high-voltage transmission lines and

triangulation towers in the flight zone increased the risk of a collision and constantly heightened the pilot's anxiety.

When flying at minimum altitude, a bomber's crew has no time for reflection. The ground passes beneath the wings so quickly that the brain does not have time to assimilate or process the information received from the eyes. In the few seconds needed to assess what has been seen, the object of scrutiny is already tens or even hundreds of meters behind. Therefore, in the search for what is most important, namely, enemy columns, all crew members are expected to participate. They generally disregard the details of the panorama, noticing only the outlines of large objects, and memorizing impressions of color: the purple of forest massifs, the yellowness of fields, or the dark grey knife-edge of a wet road.

. . . And just beyond the bridge across the Ugra River, the ribbonlike road becomes serrate. Along its even edge, prominences appear out of the grey haze. The lead aircraft's navigator, an enthusiastic amateur photographer, thinks to himself that the road looks just like a perforated photofilm, with alternating projections and recesses. But are not these projections in motion? Yes, they are tanks! The tail of the column becomes obscured by the foggy haze, and is lost to view somewhere in the vicinity of Yukhnov.

Our bombers promptly unload on the surprised enemy tank column. The bombs strike the road with a glancing blow, ricocheting into the air before they explode with devastating effect upon the column. By the time the black fountains of the bursts mushroom out, the first group of bombers is already high in the clouds. As the weather precludes the possibility of fighter resistance, the bomber pilots order the machine-gun unit-of-fire to be expended completely during the second pass. In a few minutes' time, returning from the direction of Yukhnov, the bombers reemerge from the clouds. Accustomed in exercises to the Luftwaffe's stereotyped maneuvers, the German tankers do not expect their column be strafed from the rear. So much the worse for them. The personnel and equipment bringing up the rear are plastered with a hail of incendiary and armor-piercing bullets by the aerial gunners aboard our bombers.

Before the Nazis had finished counting their dead and treating their wounded, before they had recovered from the first attack, the second flight of our long-range bombers loomed up through the misty rain. The "Achtung, Achtung!" of the sentries, the "Alarm, Alarm!" of the officers, and the ominous wail of the warning siren were all muffled by the roar of aircraft engines and drowned by the blasts of our bombs.

By evening, the Hitlerite tank column, which was to have participated in the taking of Moscow, had thinned out noticeably. Many tanks,

armored cars, and gun-hauling prime movers were either damaged beyond repair or stood awaiting repair teams. German soldiers detailed to guard this equipment, taken prisoner a week later, told how these very aircraft had bombarded their division a month earlier near Shostka, Starodub, and Unecha. The Russian bombers had deviated from the rules, tumbling suddenly out of the clouds, dropping their bombs right in the middle of the column, then hugging the ground and disappearing beyond a huge kolkhoz* apple orchard. . . .

Among the Soviet pilots and navigators who so devastatingly bombed and strafed the German tanks near Yukhnov were those born during the October Revolution. In the late fall of 1941 these lads, having just undergone their baptism of fire, celebrated their 24th birthday, not in the family circle, but at a front-line mess. The heroes of the sortie near Yukhnov, when they were dined in the mess upon successful completion of their mission, saw the following headline on their wall-newspaper: "Sons of the October Revolution in Aerial Combat!"

During the difficult days in the first period of the war, the warriors of Long-Range Aviation, like all Soviet people, piously believed that the ideas of Leninism would eventually triumph, and that the party's policy was right and would lead to victory. In our armed conflict with the Hitlerites, our airmen were guided by the party's instructions and by the precepts of Soviet military science. Benefitting from the experience of our aces, DBA pilots and navigators creatively developed the tactics of long-range bomber employment, both in aerial combat and in actions against ground forces. Both veterans and younger airmen played an active role in this.

Our regiments of long-range and heavy bombers had their share of personnel the same age as the Soviet state, i.e., who were born in October or November 1917. One such individual, Lieutenant Pavel Khrustalev, was born the very day of the October Revolution (7 November 1917 by the new-style calendar). Others born during the first months of the existence of the Soviet Republic were Vasiliy Osipov, Aleksandr Yuzhilin, Fedor Yalovoy, Vasiliy Morozov, Nikolay Petrov, and Dmitriy Volkov. They all celebrated their birthday and the anniversary of the Socialist revolution by blasting the enemy. At their request and supported by their comrades, they were assigned most exacting missions by the command at the beginning of November. Both in the battles for Moscow in 1941 and later in the war, those born in Great October were in the front rank of the defenders of their socialist homeland, whose age was reckoned from the same date as their own.

*[kolkhoz—'collective farm'—U.S. Ed.]

Together with the Soviet state, they grew up and reached maturity, joining the air force at the call of the party. Their motherland taught them well, and entrusted them with awesome equipment. During 4 years of war, the contemporaries of Khrustalev celebrated their birthday in the air, either at the stick of a heavy aircraft or at the eyepiece of a bombsight. In the late fall of the first war year, they blockaded the enemy's airfields so that the Nazi vultures could not swoop down on Moscow during preparations for the celebration and the parade. To commemorate the 24th anniversary of the October Revolution and to celebrate their own birthday, they harassed the enemy with exemplary persistence, taking a heavy toll of his tanks near Naro-Fominsk, devastating headquarters and depots deep in his rear area and blowing up his Moscow-bound troop trains.

Together with their fathers and elder brothers, those born during Great October held its banner high, carrying it from Moscow, Leningrad, and Stalingrad to Berlin and Prague. Vasilii Osipov became Twice Hero of the Soviet Union. Ivan Kindyushov, Pavel Khrustalev, and many of their contemporaries were awarded the Gold Star for their heroic exploits in the service of the Soviet state.

Stalin's assertion that "the prowess of our Red Army warriors is unparalleled" also applied to them. On 6 November 1941 the Supreme High Commander emphasized that "our renowned flyers have earned fame by their fearlessness."

Long-range bomber regiments did much to protect Moscow from German air raids. Our bombers repeatedly attacked the airfields serving as bases for the Luftwaffe units designated to strike our capital city. The aircrews and ground personnel of the enemy's special-purpose air groups "Fan" and "Condor Legion" and his 28th and 55th Bomber Squadrons were rendered ineffective by long-range bomber raids on his air bases. As early as the first year of the war, initial inroads were made into Germany's aircrew cadres, which were subsequently to suffer irreparable losses.

The situation demanded that our long-range and heavy bombers fly at night in all kinds of weather. At the outset most aircrews were required to prepare themselves accordingly as a matter of urgency. In peacetime as much as a year or at least several months would have been required to accomplish this. For one young DBA pilot, Pavel Taran, this preparation was confined to a single sortie. During the early part of the night he had his first and only, and what turned out to be his last, familiarization flight. Conditions precluded allowing Taran a second such sortie near the airfield. After midnight the young crew commander participated in a bombing strike.

Several years later the Ministry of Communications issued a postcard featuring a portrait of Major P. A. Taran, twice Hero of the Soviet Union. The time which elapsed between his night sortie of 1941 and the publication of that postcard was not long, but Taran used this time to the utmost advantage to perfect his skill as a pilot. Those who served with him recall that he flew when friend and foe alike were grounded by inclement weather. This ace of Soviet Long-Range Aviation flew in thunderstorms and fog too, when even the birds were grounded. After one such sortie, Taran's regiment learned that his bomber, after breaking through a storm front, had become enveloped in a pale blue luminescence whose associated electrostatic charge was so high that it gave very perceptible shocks to those of the crew who touched the equipment and sides of the cockpit. Pavel Taran and his crew formed the nucleus of our all-weather crews capable of round-the-clock operations.

Blind-flying mastery to maximum range was especially important for the crews sent to bomb Berlin. The air route to the capital of the Fascist Reich was reconnoitered in early August 1941 by the 1st Mine and Torpedo Regiment of the Baltic Fleet Air Force. A formation commanded by Colonel Ye. N. Preobrazhenskiy was the first to reach Berlin, accurately bombing important military targets there. By a Supreme Headquarters directive, 20 Long-Range Aviation crews were also selected for the Berlin mission, being put under the command of Major V. I. Shchelkunov and Captain N. V. Kryukov. A task force of four-engine TB-7 bombers also participated in these raids.

Just before midnight on 11 August 1941, DB-3's from DBA took part in raids on military targets in Berlin. Dropping heavy high-explosive and incendiary bombs on barracks, munitions plants, and arsenals, the bombers scattered myriads of leaflets refuting Goebbels' false propaganda that the Red Army had been put to rout and that the defeat of the USSR was imminent.

During August 1941 long-range bombers made 10 group raids on the German capital. In spite of adverse weather conditions and the long transit time over the Baltic, all our bombers performed their combat missions successfully. The fierce resistance of the multitiered German air defense system turned out to be ineffectual against our aircraft, as not one was shot down over Berlin.

By making these raids on Berlin, the heroic aircrews from Long-Range Aviation refuted German propaganda that Soviet aviation had been utterly defeated. Moreover, the damage inflicted on Berlin by the VVS disproved Goering's assertion that the German capital was impregnable. Furthermore, the raids demonstrated both the competence of Long-Range Aviation aircrews and their resolve to crush German Fascism.

Major V. Yuspin and V. Shchelkunov, Captains N. Kryukov and V. Tikhonov, and senior political instructors A. Pavlov and M. Vasil'yev were among those who made the most of our combat equipment during the raids on Berlin, exerting a strong influence on other aircrew personnel and giving younger airmen confidence in themselves. Five DBA officers—Majors V. I. Shchelkunov and V. I. Malygin, Captains N. V. Kryukov and V. G. Tikhonov, and Lieutenant V. I. Lakhonin—were awarded the title Hero of the Soviet Union on 16 September 1941 for most distinguished service in the Berlin air raids. Six other airmen were decorated with the Order of Lenin.

Operations against military targets in Central Germany and East Prussia were stepped up after all long-range bomber units and formations were combined into Long-Range Aviation (ADD) in early March 1942. Its specially created staff and commander, General A. Ye. Golovanov, were directly subordinate to and received combat tasking from the Supreme High Command General Headquarters until the end of 1944. General Headquarters Long-Range Aviation possessed a powerful tool for accomplishment of operational as well as strategic missions. As early as the summer of 1942, ADD included 10 formations and 27 air regiments. The backbone of its aircraft inventory was initially the DB-3f and subsequently the Il-4, but it was also had the Pe-8 (TB-7) extremely long-range four-engine bombers. In addition, its units had at their disposal the Li-2, Tu-2, Yer-2, and other combat aircraft.

That such a powerful special-purpose air grouping should have been assembled in the USSR during the arduous first year of the war must have seemed extremely improbable to Hitler and his confidants. However, when Long-Range Aviation had dealt a series of massed blows against German targets, the Luftwaffe's 4th Intelligence Directorate was obliged to report to Goering, "The Soviet military leadership has created an operational air force—ADD—in a remarkably short period of time."

One of the most vivid pages in the combat biography of our long-range bomber units is their participation in the defense of Stalingrad and the subsequent operation to surround and capture 330,000 Germans in the interfluvium between the Volga and Don rivers. ADD regiments and divisions greatly helped to neutralize the enemy's artillery in place and his tanks on the move. Long-range bomber units participated in night actions against the airfields serving as bases for the German squadrons that were trying to provide air support for Field Marshal von Paulus' beleaguered force.

The fame of the unit commanded by Lieutenant Colonel I. K. Brovko was born in the Battle of Stalingrad. In a 2-month period, this unit flew some 1,000 sorties in support of Soviet ground forces. Staunch patriots D.

I. Barashev, I. T. Grosul, A. P. Duzhkin, F. K. Parashchenko, and I. I. Datsenko in one night flew three sorties each with a full bomb load to harass Hitler's army. The regiment bears an honorary title in recognition of meritorious services rendered. Carefully preserved in the unit's combat glory room is some sacred soil from the Mamayev burial ground and a banner from the people of Stalingrad to its defenders—the aviators.

It was not unusual for 200 Soviet heavy bombers to participate in a simultaneous strike on the Nazi troops by day or by night in and around Stalingrad. Altogether, 450 DA crews participated in actions on the Southwestern, Don, and Stalingrad Fronts, dropping 170,000 bombs of various calibers on the enemy during more than 12,000 sorties. This contribution was recognized by the Supreme High Command General Headquarters representative, Marshal of the Soviet Union Georgiy Konstantinovich Zhukov, who gave our aviators due credit, pointing out that they were rendering invaluable aid to the Southwestern Front's 62nd and 64th Armies holding Stalingrad, in spite of the cost in terms of their own casualties.

For distinguishing themselves in the defense of the Volga stronghold, several ADD regiments later received their own honorary titles, while the 3rd, 17th, and 24th Long-Range Bomber Divisions were redesignated as Guards divisions.

Long-Range Aviation had its first guardsmen even earlier, in August 1942. As was then announced in the press at the front, the 1st, 81st, 250th, 748th, and 750th Long-Range Air Regiments, having distinguished themselves in defense of the Soviet motherland by inflicting substantial losses on the enemy, were designated as Guards regiments. Presentation of the Guards banner to a unit and Guards badge to its personnel was often a stirring event. For example, an honorary banner featuring Lenin's profile was presented to the 4th Guards Long-Range Air Regiment by Mikhail Ivanovich Kalinin personally. After the ceremony and a triumphant march, and after paying their respects to the new colors on the runway, the regiment's aircrews took off to strike the enemy in the vicinity of Voronezh.

Party-political work played an enormous role in our servicemen's victories in their engagements with the Hitlerite occupiers. Constantly directed by the party's Central Committee, such work was a most important means of promoting selfless dedication among ADD personnel to the campaign against facism and to our victory. This effort was actively organized by military councils and political organs. General G. G. Gur'yanov, member of the ADD Military Council, and S. I. Chernousov, S. I. Priyezhev, N. V. Ochnev, V. A. Okunev, Yu. I. Nikolayev, and G. D. Stoyanov, chiefs of the political departments in ADD formations, and

others ably directed the activities of party and Komsomol organizations and actively guided the indoctrination of our airmen. ADD political workers proved to be worthy successors of the Red military pilots—the fighting commissars of the Civil War period.

The commissars, like the commanders, set a personal example of courage, dedication, and military expertise in combat against the hated enemy. Military commissars and deputy commanders for political affairs N. V. Petlenko, P. S. Stashin, P. N. Dokalenko, A. G. Kazarinov, D. Ya. Burdygov, P. A. Volkov, and dozens of other political workers flew combat missions, often assuming the most difficult role of reconnaissance or target illumination, spearheading the sortie.

B. S. Korbut (now Honored Military Navigator of the USSR) recalls how young pilots and navigators not yet baptized by fire were apprehensive during their first few weeks at the front, fearing that they would not survive the strong enemy air defense facilities encountered on their missions. Then the formation's commissar S. Ya. Fedorov arrived at the airfield, picked the least experienced aircrew, and flew with it on a mission. Thanks to a thorough preflight and well-conceived tactics over the target, the crew successfully fulfilled its mission and safely returned to base. The commissar's example gave the others faith in themselves.

The airmen of ADD considered the most difficult target on the entire Soviet-German Front to be enemy installations in the vicinity of Kerch', protected by 120 antiaircraft batteries and several dozen searchlights. When, due to lack of experienced aircrew personnel, certain subunits began to suffer losses, political workers Kovbasenko, Nikolayev, Burov, Nasenko, and Aleksandrov flew aboard Kerch'-bound bombers as crew members. By their personal example they taught the airmen self-control, courage, and skill, and inculcated combat stamina. Among the best pilots were political workers A. P. Chulkov, D. V. Chumachenko, and I. I. Kozhemyakin and Battalion Commissar S. N. Sokolov, all of whom were subsequently awarded the title Hero of the Soviet Union by the Presidium of the USSR Supreme Soviet.

To this day, the personnel of Unit "X" revere the memory of Senior Political Instructor Sluzhbin, who refused to bail out of his burning bomber, staying with it while it cut like a torch into a German tank column near Stalingrad.

One ADD political worker, a 17th Guards Air Regiment navigator named V. Ya. Beloshitskiy, was the subject of many newspaper articles. Young commissars were taught on the basis of his experience. Vasiliy Beloshitskiy was not only a passionate propagandist among the personnel, but also a master of the navigator's art. During a sortie near Smolensk,

ombomber he was navigating made direct hits on the commandant's office, guard house, and fence at a camp of Soviet prisoners of war. Several hundred prisoners escaped in the ensuing confusion, hiding in the woods before crossing the front line to rejoin the Red Army's ranks. Among the escaping prisoners were airmen of Beloshitskiy's own regiment who had been shot down over enemy-occupied territory during the first months of the war.

"From the beginning of the Great Patriotic War," wrote comrade L. I. Brezhnev, "the slogan 'Party members to the fore!' became the supreme standard, the law of life, and the criterion of personal contribution for each party member. During the war, the party lost three million of its sons at the fronts. Five million servicemen sought admission to the party, and their probationary period became a test of courage."¹

During the war, membership in the party organizations in ADD units was constantly replenished and increased. Ardent Soviet patriots, whether pilots or navigators, young aviation specialists or technicians, considered it a great honor to be a party member. Joining the party at the front, they displayed faith in victory, dedication to the fulfillment of the great Lenin's behests, and readiness to defend our nation's socialist gains at the cost of their own lives.

This began on the very first day of the war. Thus, 60 airmen in the 81st Long-Range Bomber Regiment filed applications for admission to the Communist Party following a 22 June 1941 meeting. After their first encounter with the fascist occupier, Soviet pilots, navigators, and technicians wanted to become communists. During the war years the party organization of the 31st Guards Red Banner Air Regiment admitted to its ranks 339 officers, sergeants, and soldiers who had distinguished themselves in battle against fascism.

The young communists regarded the day of their acceptance into the party or when they received their party card as the most unforgettable day of their life. Aircraft commander V. A. Borisov wrote in his application for admission to the Party, "Now and always my heart belongs to the great cause of the Bolsheviks. I shall prove this by my service and my private life." During the next 6 months while assigned to ADD's 750th Air Regiment, Borisov flew scores of sorties, bombing enemy air bases and communications plus Hitlerite strong points and supply depots. So great were Borisov's contributions that he was soon made a squadron commander and later deputy regimental commander during the days of the intense activity on the Stalingrad Front. On 31 December 1942 he was decorated with the Order of Lenin and a Gold

¹ L. I. Brezhnev, *Leninskim kursom* [Following Lenin's Course] (Moscow: Politizdat, 1970), I, 129.

Star for outstanding feats in the struggle against the German Fascist occupiers. The young communist had lived up to the oath made in his application.

The communists of Long-Range Aviation underwent combat tempering in the crucible of warfare and passed a rigorous examination in spiritual stability. By mid-1943, 11,000 communists were registered in ADD party organizations. They were the backbone of combat air regiments, communications units, and in the rear services. Indeed, they cemented all personnel into a monolith. Under the guidance of party organizations, thousands of Komsomol members united into 280 primary organizations, were indoctrinated, and actively fought the enemy. Communists and Komsomol members constituted about 85 percent of all airmen in ADD units. In 1945 there were more than 19,000 communists in ADD party organizations.

The most important ADD mission during the war was destruction of enemy aircraft on the ground and active participation in the struggle for air superiority. In 1941-42 this struggle was conducted under conditions unfavorable to us, due to the numerical superiority of Hitler's air force and the German occupiers' having better aircraft in the initial stage of the war.

Since the Hitlerite fighter squadrons were trained to operate by day, their numerical superiority and technical excellence tended to become irrelevant when Long-Range Aviation regiments began to bomb by night. For example, the Luftwaffe's 55th Squadron lost almost 100 bombers as a result of a successful night raid on the airfields at Saki and Sarabuz alone. This obliged the enemy to redeploy his bombers to airfields farther from the front line, and to withdraw the 55th Bomber Squadron to the Donets Coal Basin area for complete reconstitution.

In one year 200 enemy aircraft, tantamount to a large aviation formation, were destroyed by the 2nd Guards Air Regiment alone. The staff of Germany's 17th Army reported to Hitler that "... by its devastating raids on our airfields, the Russian Air Fleet has demonstrated formidable potential." However, the staff advisedly refrained from pointing out that potential per se does not wage war. In the course of hostilities this potential was realized by valiant Soviet patriots—the pilots, navigators, aerial gunners, and radio operators of our ADD units.

Hero of the Soviet Union Colonel General of Aviation V. V. Reshetnikov, Honored Military Pilot of the USSR, Long-Range Aviation veteran and presently its commander, has the following recollections.

One long-range bomber regiment was ordered to fly a second night

strike against a large Hitlerite air base from which enemy aircraft staged air raids on Soviet towns and villages that were located far from the front and poorly protected by antiaircraft artillery. Caught unawares by the initial attack the night before, the German gunners and searchlight operators were on their guard. The first Soviet aircraft to approach the target encountered a strong screen of heavy-caliber artillery fire. To penetrate the barrage was not easy, but the mission had to be fulfilled at any cost, as the lives of thousands of our women and children in the rear area depended on its successful completion.

On the first pass, Reshetnikov's crew released only the bombs externally stowed. They struck a German gasoline dump, causing scattered fires and a deafening explosion in quick succession. However, our bombers barely eluded the encircling ring of antiaircraft artillery fire. It turned out that the enemy had kept some of its batteries in reserve specifically for employment against those aircraft on the bomb run or those dropping parachute flares.

How could a second pass be made to drop the ten 100-kilogram bombs still stowed in the internal racks? At this point, the group leader recalled a maneuver mentioned by Captain Ye. P. Fedorov, experienced aircraft commander and hero of battles against the White Finns. Fedorov, in striking an objective protected by formidable antiaircraft artillery, approached at an altitude greater than that assigned. He then increased the pitch of his propellers and throttled his engines, descending toward the target at reduced speed. Revving up his engines slightly, he leveled out for the final bomb run. After dropping his bombs, he descended once again and departed the target at minimum speed with his engines idling. In this way, he avoided detection by the enemy's sound locators, and the German gun crews had to fire at random.

Reshetnikov's crew used this advice on the second pass. The bomber glided so quietly that the pilot and navigator whispered to each other over the intercom, laughing afterwards at their needless precaution. The searchlights swept the sky and the antiaircraft artillery fired intermittently while Reshetnikov's crew calmly took aim, as if at the bombing range.

The bombs effectively disposed of several Junkers aircraft parked on the ground, but Reshetnikov's premature attempt to hasten his departure from the danger area evoked a prompt response from the enemy. Several searchlight beams intersected on his bomber.

Almost immediately, the Il-4 was surrounded by antiaircraft artillery bursts and was the target of tracer bullets from small-caliber artillery. However, the pilot was able to egress the danger zone, first wagging the wings, then diving, then abruptly pulling out of the dive.

When the enemy antiaircraft gunners suddenly ceased fire, Reshetnikov ordered "Be on the lookout!" Soon radioman Chernov reported, "Fighter to port." Against the background of a moonlit cloud was the dark silhouette of a twin-ruddered aircraft. There was an Me-110 on our bomber's tail below and to the left.

Reshetnikov throttled back his port engine abruptly and, losing altitude, tried to slip sideways underneath the fighter. The Il'yushin's gunner opened fire first with the turret machine gun. Its tracers pierced the right wing of the German fighter and hit its starboard engine. However, the Messerschmitt managed to fire a volley at the bomber from its nose cannon. The Il'yushin's navigator, Vasiliy Zemskov, was seriously wounded by shell fragments, which also damaged the pilot's instrument panel. Reshetnikov instantly became aware that the stick was unduly hard to move. He realized that an elevator trimming tab was probably broken and that there might also be an aileron malfunction. . . .

The members of the Il'yushin's aircrew laconically reported, "Altitude 200, speed 240 kilometers, . . . the Messerschmitt's on fire . . . it's crashing . . . it's blown up! . . ."

The navigator, wounded in the back, lay on his cockpit floor. Suppressing a groan, he told the pilot from memory the course to the front line. As the front was more than an hour away, a higher altitude was in order, so the pilot pulled back on the stick. The time passed very slowly. When the navigator reported an altitude of 3000 meters, the starboard engine knocked violently and stalled. The aircraft veered to the right and began to glide, rapidly losing altitude.

The front line was crossed at an altitude of 600 meters. The aircraft continued to descend and the port engine misfired with increasing frequency. By the faint light of the moon, the underlying terrain was seen to be almost completely wooded. Reshetnikov ordered his crew members Chernov and Nezhentsov to bail out. "Roger, sir," was their brief reply. Two soft tremors were felt, and after a short interval of silence on the telephone, the navigator's weak voice was heard to say, "You jump too, commander. . . ." But, with a wounded comrade in the forward cockpit, Reshetnikov could not bring himself to bail out, so he said: "Hang on, Vasya! We'll land together . . . Hang on, my friend. . . ."

A minute later, a large clearing appeared in which the aircraft landed with gear still up. The pilot backed off the port engine's throttle quadrant completely and pulled the stick toward himself. After its initial impact the bomber skidded on the snow for a few seconds, and then there was silence. It was broken by the navigator, who said, "Well done, commander, a soft landing. I gave you the correct course. Now I can die on my native soil."

Returning to his regiment toward midday, Reshetnikov read a telegram from partisan headquarters reporting that long-range bombers had destroyed 20 enemy aircraft at the enemy air base. Only a day later, with another navigator and a reserve aircraft, Vasiliy Reshetnikov once again set forth on a combat sortie. Altogether during the war years he was to participate in more than 300 combat missions, running the gauntlet of air defense fire in order to strike enemy installations.

The veteran airman described only one long-range bomber raid on an enemy air base. During 1942 alone, ADD crews flew more than 6,200 sorties against the air bases of the Hitlerite forces.

Captain Aleksandr Ignat'yevich Molodchiy, one of ADD's best pilots, had already distinguished himself repeatedly during the initial months of 1942 in combat against the German Fascist occupiers. The flying biography of this innately talented individual, his attraction to the fifth ocean, began in the classroom. As a schoolboy, Sasha Molodchiy was a winner of All-Union model airplane competitions. Student pilot Molodchiy was a star pupil of Osoaviakhim in Luganskaya* oblast.†



Major General of Aviation A. I. Molodchiy, Twice Hero of the Soviet Union (1955).

It would be hard to find a sector of the Soviet-German front where Molodchiy's crew did not participate in bombing operations. Although Captain Molodchiy was the youngest ADD subunit commander, even veteran pilots profited by his experience, emulating his tactical thought, combat stratagems, aircraft handling, and gumption. In routine engagements this young aircraft commander did not use the hundred combat methods known both to himself and to his adversary. By using the 101st method, known only to himself, he was successful due to the element of surprise.

Aleksandr Molodchiy proved that a first-class pilot must not only be capable of completing any assigned mission successfully, but must also know how to safeguard his aircraft

*[So named as the region surrounding the city of Lugansk. The city is now called Voroshilovgrad and the region Voroshilovgradskaya oblast—U.S. Ed.]

†[oblast—Soviet political-administrative unit—U.S. Ed.]

and aircrew from the enemy's antiaircraft artillery. Some officers have ascribed Molodchiy's successes to "luck" or to unrevealed "secrets," but those successes were actually based on a profound and painstaking study of fighter and antiaircraft artillery tactics and the equipment employed by the enemy to counter ADD crews.

Aleksandr Molodchiy carefully studied other pilots' experience, creatively assimilating whatever was worth imitating. He displayed initiative and resourcefulness in combat and was an exemplary innovator. It was at his suggestion that our long-range bombers began to use enemy broadcasting stations for radionavigational purposes.

In August 1942 Molodchiy participated in a Berlin raid for the first time. While still in the zone of antiaircraft artillery fire, the intrepid aircraft commander reported directly to ADD Headquarters and to General Headquarters that the bombing mission had been successfully completed. A few minutes later his radio operator received a message from Supreme High Command in Moscow wishing all concerned a speedy and safe return. In those minutes above the capital of Fascist Germany, Aleksandr Molodchiy, in the name of ADD aircrew personnel and all Soviet servicemen, declared to friends and foes alike that there would soon be a turning point in the war and that the utter defeat of Hitlerite Germany was inevitable.

Aleksandr Molodchiy once spent more than 8 hours in the air on a mission near German-occupied Warsaw. Catching the enemy's air defense system unawares, he dropped his first bombs on well-illuminated targets. The glow of the resulting fires could be seen 150 kilometers away.

One cannot read without emotion the citations promulgated at the front when Molodchiy was awarded his second Gold Star and other combat orders. In one such document Guards Colonel Balashev, commander of the 2nd Guards Air Regiment, wrote the following: "... Molodchiy never allows his bombs to be released unless he is satisfied that the correct approach to the target has been made and the bombs will not miss the target. He does not concern himself about altitude when carrying out this mission, regardless of enemy air defenses."

The young aircraft commander Aleksandr Molodchiy found in his navigator Sergey Kulikov a man after his own heart. They both repeatedly said to their comrades in the squadron, "The disgrace of missing the target is more to be feared than the enemy's fighters or antiaircraft weapons."

Molodchiy was highly respected by his comrades for his principles and integrity. He received the title Twice Hero of the Soviet Union at the end

of 1942, only 18 months after first participating in combat against the enemy. This alumnus of Lenin's Communist Youth League and Osoaviakhim flew more than 310 successful sorties and logged more than 1,300 hours of flying time in war's flaming skies. In a small but interesting book published in his home town of Lugansk, this remarkable flyer shares with the reader his recollections of past battles, and tells about the exploits of his comrades-in-arms.

In the course of the war, Long-Range Aviation units devoted much effort to the task of neutralizing the enemy's railroad network, bombarding the junctions, structures, and communications. This was because 60 percent of personnel and equipment resupply needed by the fascist troops was transported by rail. In a single week of August 1943, our long-range bombers flew 256 sorties, dropping several hundred tons of bombs on railroad structures and on military-freight and troop trains at the Osnova, Khar'kov, and Lyubotin stations. At the same time, in coordination with Frontal Aviation, ADD units and formations paralyzed enemy rail traffic in a 400-kilometer zone at the center of the front. In July 1944 the Soviet Information Bureau reported that our long-range bombers had struck a total of 52 railroad junctions and major stations.

In a raid on the town of Brest, bombers of the 3rd Guards Air Division blew up a bridge, a repair shop, and nine locomotives, set fire to dozens of tank cars, and scored hits on several troop trains and flatcars carrying combat equipment. They also destroyed the premises occupied by a German Army divisional headquarters, and a large garage. Partisan intelligence reported that about 3,000 Germans were killed or seriously wounded in the raid. Devastating explosions occurred in the southwestern part of the railroad junction, starting fires which could be seen 200 kilometers away.

During the second phase of the war when the strategic initiative was already in Soviet hands, long-range bombers made night raids on most of the major junctions supporting German troop movements. During 4 years of hostilities, aircraft from Long Range Aviation flew 64,000 sorties to bombard troop trains, bridges, and repair shops in its campaign against the enemy's rolling stock and railroad storage facilities.

The success of each such sortie largely depended on the level of combat training and expertise of officers of the Navigator Service. A characteristic feature of the work of a bomber crew is that, during the decisive segment of a sortie, the bombing run, the aircraft commander (the pilot) reacts to the reports or signals of the navigator.

For the sake of this short segment of the flight of 40-60 seconds duration culminating in the release of the bombs, the crew may have

spent 6-10 hours in the air, passed through storm fronts, climbed to maximum altitude, repulsed fighter attacks, and penetrated a wall of antiaircraft artillery fire.

On the bombing run, from the commencement of aiming to the pressing of the bomb-release button, the pilot and the entire crew strove to create the best possible working conditions for the navigator. On this main segment of the sortie the navigator became the leader. He made the heading corrections, pointing the aircraft in the desired direction either by making slight course alterations himself or by a series of commands to the pilot, then keeping the "run" of the target on the aircraft's course line. Finally, the navigator chose the moment for bomb release, that instant upon whose correct determination depended the results of dozens of other people's labor.

In our time, every schoolboy knows that the flight of a giant missile begins the moment a button bearing the brief inscription "Launch" is pressed. During the war years, the success or failure of any crew depended in the final analysis on the precision of the aiming process and on the navigator's timing when he pressed the button on the bombsight or on the electric release mechanism. However, the pressing of the button was preceded by dozens of complex operations. The navigator had to take into account his bomber's speed and altitude, and the time of fall of a bomb from that altitude (different for bombs of diverse size and purpose). Bombing success also depended on the correctness of wind-speed reports, the accuracy of drift determinations for both the aircraft and the bombs, and on adherence to the approach time required to reach the target. Often, all this was done at night, or with the regiment's aircraft flying in trail and in coordination with a target illumination aircraft.

Both the pilot and the navigator had to bear in mind that one cannot predict with complete certainty such factors as enemy fighter resistance, the accuracy of antiaircraft artillery fire in the vicinity of the target, or a sudden deterioration in the weather.

A sortie deep into the enemy's rear area often lasted 8-12 hours, whereas the approach run lasted a few dozen seconds. The aircrew's many hours of strenuous effort were consummated in a thousandth part of the sortie's duration. While taking aim, the navigator was far too preoccupied to pay attention to the real risk of being shot down over the target, to the danger of a close antiaircraft shell burst, or to the hazard of a hostile interceptor's machine-gun fire. During the bombing run the pilot also needed all his expertise to prevent the heavy aircraft from banking, yawing, descending, or pitching upward.

Each bombing run is rightly regarded as a feat of arms on the part of

the pilot, navigator, and crew. Many ADD navigators flew 300-500 sorties during the war, and they did not always salvo their bombs. Very often a bomber made two or three passes at a target, dropping the bombs piecemeal. It is therefore not difficult to imagine the courage and endurance required of our navigators and of all aircrew personnel.

Combat navigators in Long-Range Aviation have enjoyed deserved honors and great respect. More than 100 of them were awarded our country's highest distinction, the title of Hero of the Soviet Union, for unequalled valor and expertise contributing to the defeat of the Hitlerite troops. Junior Lieutenant (now Colonel) V. V. Sen'ko, flight navigator in the 10th Guards Air Regiment, was awarded the title twice.

Navigators M. P. Orlov, F. P. Yalovoy, V. F. Roshchenko, and I. I. Kindyushev were among those awarded the Gold Star for their bombing precision. Boris Petrovich Gushchin was praised by his comrades-in-arms as a fearless navigator who was prepared to die 100 deaths en route to the target.

On the darkest of nights, with enemy installations carefully camouflaged and without landmark beacons along the route, many of our navigators achieved staggering accuracy both in keeping their aircraft on course and in releasing their bombs.



Guards Captain V. V. Sen'ko, ADD's only navigator ever to be awarded the title Twice Hero of the Soviet Union (1944).

Major Urutin's crew on a single sortie destroyed 19 aircraft on a German airfield. Captain Stolyarov, navigator on another crew, scored a direct hit with 12 heavy bombs on General List's headquarters near Smolensk, whereupon the building's walls collapsed and its occupants were buried under the debris.

On 3 May 1943 eight fascist generals and 150 officers were killed when the Hitlerite field commandant's office in Minsk was struck as a preplanned target during a Soviet air raid. Among other military objectives bombed during the raid were barracks housing German officers and enlisted men, more than 2,000 of whom either perished or were seriously wounded by the falling debris. The casualties included

more than 200 members of the Luftwaffe. Navigators played a vital role in these successes.

Perhaps no other profession in Long-Range Bomber Aviation demanded such diversified and in-depth preparation as the navigator's specialty. This was made all the more true by the fact that he also had to know how to fly a military aircraft. Certain types of ADD aircraft had dual control. In an emergency situation such as the pilot's being seriously wounded, the navigator could control the aircraft from his own forward cockpit. In not a few instances navigators used this equipment to fly back to their own airfield or to land a damaged aircraft in territory held by friendly troops.

In an article entitled "Arctic Night," Konstantin Simonov spoke warmly of navigator N. D. Gubin, who assumed control of an aircraft when the pilot died at the stick. Later, Gubin graduated from a flying school and served in combat as a crew commander. When aircraft commander Stogniyev sustained an eye wound in flight, his navigator Krylov took over the aircraft, flew it across the front line, and after an engine failure, made a successful forced landing in a field. Captain S. Timofeyev, a squadron navigator in the 340th Air Regiment, and aircraft navigators P. Trofimov, K. Ikonnikov, and V. Kovbasyuk ably helped their pilots to fly their burning bombers back across the front line and land them in our territory.

Guards Captain F. F. Koshel', a 9th Guards Air Regiment flight navigator, stood out among Long-Range Aviation's best bombardiers by virtue of his expertise and valor. In September 1943 he received the title of Hero of the Soviet Union, and for outstanding services rendered in the campaign against the German Fascist occupiers his name is eternally enshrined on the roster of Unit "X" by order of the USSR Minister of Defense.

Thanks to the constant concern of the Communist Party and of all the Soviet people, there was a marked increase during the second year of the war in the combat potential of Long-Range Aviation, which now contained the units of eight air corps. In 1943 its crews flew about 75,000 sorties. ADD airmen together with other VVS servicemen made a great contribution to the liberation of the Donets Coal Basin, the left bank oblasts of the Ukraine, and the towns of Orel, Belgorod, Khar'kov, and Kiev, inflicting heavy losses on the enemy.

However, the aforementioned victories were won at no light cost. As in the first months of the war, in the summer of 1943 ADD crews encountered active fighter resistance en route and air defense interceptors in the target areas. There were fierce aerial skirmishes whose outcome largely depended on the performance of our aerial gunners. These heroes

were much praised in news reports from the front, which called the aerial gunner the bomber crew's shield. Fascist fighter pilots attacking a Soviet long-range bomber tried first of all to kill its gunner, thus rendering its crew defenseless.

As a rule, our aerial gunners displayed exemplary self-control and admirable valor, performing prodigious feats of arms in moments of mortal danger. Thus, they emulated veteran aerial gunner S. P. Desnitskiy, who distinguished himself repeatedly during the war in Spain in combat against the then new Me-109. In 1936 Desnitskiy was awarded the title Hero of the Soviet Union.

Long-range bomber regiments suffered losses from fascist fighters, especially in the initial phase of the war. However, as the 4-year fiery duel wore on, our bombers gained the upper hand. Documents derived from one ADD unit testify to the fact that nearly 10 Nazi fighters were shot down for every Soviet long-range bomber lost to fighter action. This is attributable to the fact that ADD aerial gunners were masters of their art, opening fire at just the right moment, having correctly determined the lead, taking into account their own weapon's trajectory drift. Such air gunners as Grigoriy Bilyk, Vasiliy Akishin, and Nikolay Golubev were unsurpassed at shooting down enemy fighters. Rozhdestvenskiy and Matveyev, who belonged to Hero of the Soviet Union I. L. Senagin's crew, shot down four German fighters within a few days. Master Sergeant Sherstyanykh, radioman-gunner of Captain I. G. Fedorov's Guards aircrew, was awarded the Order of the Red Banner and was a two-time recipient of the Order of the Great Patriotic War for exemplary marksmanship in aerial combat. The highest Soviet award, the Order of Lenin, was conferred on Junior Sergeant Nikolay Subbota, who shot down a number of German aircraft.

Many long-range bomber crews had to their credit 6-10 victories over the enemy in aerial combat. The gunners in the crew of Guards Major P. A. Taran, Twice Hero of the Soviet Union, accounted for 23 such victories over the fascist vultures.

After egress from the target area, Lieutenant Idrisov's bomber was set on fire by fascist fighters. He ordered his crew to abandon the burning aircraft, then bailed out himself right after his navigator. After making several firing passes at the parachutists, all but one of the fighters broke off towards a river-crossing operation. The remaining fighter, diving, accompanied the falling bomber. Suddenly, the Il'yushin's turrets came to life, and a protracted machine-gun burst riddled the wings of the Messerschmitt, which fell like a stone. Junior Lieutenant Golovko and Sergeant Panyushkin had opened fire on the enemy. The brave gunners did not abandon their burning aircraft until they had destroyed the enemy.

However, by that time it was too late to bail out; there was too little altitude. The brave Soviet troops demonstrated that the aerial gunner is a first-class fighting man, a patriot completely devoted to his motherland.

Our aerial gunners heroically fought the enemy and were the irreplaceable assistants to aircraft commanders when the going was rough. For example, the heroic feat performed by Master Sergeant P. Nesterov has found a place in the annals of one Long-Range Aviation Red Banner Guards unit. When his bomber's main fuel line was pierced by an enemy antiaircraft artillery shell fragment while over the target, Nesterov crawled into the fuselage and stayed there, stopping the leak with his hands for 3 hours. This saved the crew from the toxic effects of gasoline fumes, and the aircraft returned to base. For his resourcefulness and valor, Master Sergeant Nesterov was awarded the Order of the Red Star. During another sortie in the vicinity of Sevastopol', an antiaircraft artillery shell severed an elevator tie-rod in one of our bombers. Gunners Yerechin and Severin retrieved the ends of the broken rod and lashed them together with cord, thus helping the pilot to reach the nearest airfield.

Paying tribute to aerial gunners, and to tail gunners in particular, the renowned test pilot M. Gallay, Hero of the Soviet Union, wrote, "A good tail gunner is a second pair of eyes for the commander. . . . Having a reliable tail gunner is a great thing."

After the rout of the German Fascist troops at Stalingrad, the party called upon all Soviet servicemen to step up their strikes against the enemy and to accelerate the liberation of our native land from the fascist yoke. Our Armed Forces thereupon mounted a general offensive on an enormous front stretching from Leningrad to the Caucasus.

ADD crews answered the Party's call with martial deeds. Units began to vie with one another in the matters of sortie effectiveness and bomb load. Such rivalry was initiated by the pilots and navigators of the 81st and 24th Air Regiments. Crews commanded by Pavel Taran, Vasiliy Osipov, Nikolay Delenyuk, Boris Tikhomolov, and Vasiliy Sitnov were the first to demonstrate the possibility of increasing the designed bomb load by 150-250 percent. Widespread adoption of this innovation meant that for the same number of aircraft ADD's strike capability increased considerably.

It should be emphasized that prior to 1944 the bomb tonnage dropped on troops and installations of the Fascist Reich by Long-Range Aviation considerably exceeded the tonnage dropped by the air forces of the U.S. and England. While the Soviet Union was carrying on a huge war effort against Hitlerite Germany, the ruling circles of the major powers—our allies—preferred to save their strength. They did not actively employ their

air forces in combat until 1944, when they could see that Western Europe might be liberated from the yoke of German Fascism by the Soviet Army even without their participation.

During the first 3 years of the war our allies did not open a second front on the continent of Europe, and Hitlerite Germany concentrated its main effort on the campaign against the Soviet Union. Even after Soviet troops gained the strategic initiative, the Hitlerites' resistance was considerable, so that the successes achieved by our aviation were costly. Those successes were in decisive measure due to the maturity of our command cadres, the rising maturity of staff officers in units and formations, and the acquisition of combat experience by our senior officers. The successes of ADD units were also based upon the mass-scale heroism of pilots and navigators, of gunners and radio operators, on the keen mastery of the aviators as they accomplished the most complex missions.

Pilot E. K. Pusep, navigators A. P. Shtemenko and S. F. Ushakov, and other aircrew personnel of the 746th Air Regiment made the most difficult special flights from Moscow to the U.S., Britain, and Italy in an exemplary manner, exhibiting courage, fortitude, and mastery of their combat equipment.

During the war years our pilots were dedicated to the cause of victory over the fascist aggressors. Outstanding in this respect were Vitaliy Yuspın, Nikolay Krasnukhin, Vasiliy Balashov, Aleksandr Yuzhilin, Serafim Biryukov, and Nikolay Parygin, each of whom flew more than 300 sorties. Vasiliy Sen'ko, ADD's best navigator, bombed enemy targets 420 times.

The urge to destroy the enemy at any cost was a requirement for each of our pilots. For example, party member Aleksey Plokhov, was assigned a target illumination mission in a regimental area of operations. Mission accomplishment by dozens of other crews depended on his success. Although one engine quit soon after takeoff, Plokhov did not return to base until he had successfully marked the regiment's targets after a 3-hour flight into enemy-occupied territory. In subsequent sorties this young aircraft commander also performed bombarding missions successfully. A. A. Plokhov's feats were duly recognized when he was awarded the title Hero of the Soviet Union by the Presidium of the USSR Supreme Soviet.

Our servicemen, like our nation as a whole, had been indoctrinated in the spirit of collectivism by the party, by the Soviet regime, and by our socialist reality. Each ADD crew during the war years constituted a coherent and unified subunit. Fidelity to the ideals of socialist humanism and readiness to render aid to a comrade on the ground or in the air,

whatever the risk, were the unwritten norm of conduct for aviators—officers, sergeants, and soldiers.

His aircraft set afire in aerial combat, Guards Captain Pozhidayev managed to land in a plowed field not far from our main line of resistance. Everyone escaped from the bomber except the radioman-gunner, who could not open his hatch. The crew commander returned to the burning bomber, broke the glass canopy with the butt of his revolver and, at the risk of his own life, pulled his subordinate from the flames.

The brave aviator underwent six operations. Deep scars from the burns were left on his face and hands. Pozhidayev returned to active service and fought in the skies over Berlin. All his love for the motherland and hatred towards the enemy found expression in the final strikes against the lair of the fascist beast.

An example of collectivism and concern for subordinates was also set by Major P. Arkharov, bomber pilot and party member. When penetrating to the target through an air defense artillery screen, his Pe-8 bomber sustained serious damage to its flight controls and its fuel tanks were holed. The aircraft ceased to respond to the controls. The crew could have abandoned the aircraft but the seriously wounded radiomen-gunners reported that they could not bail out. For their sake, the aircraft commander flew back to his airfield, lowered the gear, and made an emergency landing. He had risked his own life in order to save his subordinates.

During one flight, Guards Captain V. M. Bezbokov, a deputy squadron commander in the 7th Guards Gatchina Air Regiment, performed a feat. Returning home across the front lines, Bezbokov's crew saw the bomber ahead of them catch fire and make a forced landing in the neutral zone near the Hitlerite trenches. Communist Bezbokov landed nearby in the field, picked up Senior Lieutenant Volkov's crew (two of whom were wounded), took off successfully under enemy machine-gun fire, and returned his comrades-in-arms to their airfield.

Besides the communists, Komsomol members also acted selflessly. When Mikhail Popovich's crew was shot down by the Hitlerites, their withdrawal into the woods was covered by Komsomol member copilot Aleksey Ivanov. The Hitlerites captured the wounded hero. As was later reported to the unit by Regimental Commissar Rudnev, a partisan leader, Ivanov conducted himself courageously under torture, not divulging any classified information to the fascists. Hundreds of brave young patriots like Ivanov, members of the Komsomol from Long-Range Aviation units, felt no fear while fighting the enemy.

In its greeting promulgated on the occasion of the 25th anniversary of the founding of the Komsomol, the CPSU Central Committee pointed out

that "during the Great Patriotic War our young people were acutely conscious of their duty to their motherland and unbending in their will to rout the enemy. They are worthy successors to the older generation and deserving heirs to the party's combat traditions." Listing in its greeting the representatives of the various branches of arms, the Central Committee accorded first place to the Komsomol contingent of the Soviet Air Force and all young aviators. This honorary and lofty rating applied as well to the troops of ADD.

During the past cruel war, the ranks of ADD warriors grew, rather than decreased. Two new personnel took the place of every one that fell. The indomitable Soviet people, like heroes in a fable, fed troop units with their own lifeblood, compensating for combat casualties with their best sons. The place of a fallen airman was not infrequently filled by a friend or relative who took over the stick, the bombsight, the airfield parking spot, or special vehicle.

The war years saw several instances of brothers earning fame as servicemen in ADD. Noteworthy in this context are the four Drozdov brothers Mikhail, Ivan, Georgiy, and Vladimir, who all devoted their lives to aviation. No less illustrious were the two Panichkin brothers, Mikhail and Nikolay, navigators who long vied with one another in the bombardment of enemy installations. For distinction in combat they were both awarded the title Hero of the Soviet Union by a single decree of the Presidium of the USSR Supreme Soviet. On the same day, they were presented the deserved awards in the Kremlin. Mikhail was awarded Certificate and Gold Star No. 11895, while Nikolay received No. 11896.

The two Bezbokov brothers, Nikolay and Vladimir, served in the same Guards air regiment. The younger one, Vladimir, flew about 260 sorties into the enemy's rear area destroying 8 troop trains, 26 tanks, 12 aircraft, and 6 supply depots. More than 720 parachute flares and 200 tons of high-explosive bombs were dropped on German targets by his crew alone. Nikolay Bezbokov's combat successes were also impressive.

The formation of new ADD units and their being supplied with improved equipment continued through the years 1943 and 1944. Moreover, combat experience acquired, the availability of new types of aircraft, and a sufficiency of aircrews made it possible to specialize. Long-range fighter-escort regiments, night interceptor units, and hunter-blockader regiments were formed. Furthermore, Long-Range Aviation stepped up its combat operations. More than 16,000 sorties were flown during May-September 1944 on behalf of our ground forces on the 1st Baltic Front and the three Belorussian fronts. More than 60,000 sorties altogether were flown in 1944, most of them in support of and in close coordination with the ground forces.

Such a large number of sorties made heavy demands on aviation rear services. Long-Range Aviation used 6,000 freight cars full of bombs just in the summer of 1943 on the Kursk Salient, when a one-time refueling of its aircraft took almost 5,000 tons of gasoline. Toward the end of the war, more than 7,000 tons of fuel were needed for a single sortie of the 18th Air Army's bombers.

An illustrious page in the history of our long-range bomber units is their contribution to the defense of Leningrad, first rendering aid to the heroic defenders of the besieged city and then participating in attacks on enemy positions when our troops went on the offensive. As was noted by the foreign press at the time, the Soviet air raids on Helsinki at the beginning of 1944, in which as many as 900 ADD bombers took part, played a decisive role in obliging Finland to withdraw from the war and break with Hitlerite Germany.

As the Leningrad blockade was being breached, each aircrew from Unit "X" flew four to six sorties per night against the retreating Hitlerite troops. The bombers of this regiment flew approximately 1,100 sorties in support of the Leningrad Front, and the entire unit received the honorary title of Krasnoye Selo Regiment.

Massive employment of long-range bombers on the Karelian Isthmus made it possible to destroy the reinforced concrete belt known as the Mannerheim Line and hastened our capture of Vyborg. Although ADD units here constituted only 25 percent of our bomber aviation, they dropped more than half the bombs used by the VVS on this sector of the front.

The combat might of Long-Range Aviation fully manifested itself in the storming of Koenigsberg,* when aerial bombardment and artillery fire cleared the way for our ground forces, which overran the fortress city in 5 days. In the decisive hour of the assault, about 750 heavy bombers battered the citadel in succeeding waves from all directions. Ten bombers approached the target town every minute, and the strike density reached several dozen tons of bombs per square kilometer.

Hitlerite General Loesch, Commandant of Koenigsberg, admitted that the defending German troops were worn out, driven underground, and demoralized by Soviet aviation, which played a major role in the capture of the town.

Pilots, navigators, gunners, and radio operators from ADD showed great courage and resourcefulness in such operations. A rare event took

*[Koenigsberg—now Kaliningrad—U.S. Ed.]

place during the storming of Koenigsberg. During the bomb run, a bomb released by a bomber above them hit Guards Major V. N. Osipov's aircraft and lodged undetonated in the wing between an engine and the fuselage. Noting this, Osipov banked and pitched in vain attempts to dislodge the bomb. Wobbling the wings while in a steep climb had the desired effect, and the bomb left by the hole through which it had entered, detonating harmlessly some distance below and behind the aircraft. Osipov resumed his mission, completed it successfully and returned safely to base. Major Osipov flew almost 380 sorties in the course of the war, bombing enemy installations in the deep rear area. He was twice awarded the title Hero of the Soviet Union. When demobilized, he returned to his home town of Leningrad, where his statue stands in Victory Park beside that of Ye. P. Fedorov, another Leningrad-born ace from Long-Range Aviation who was also a two-time recipient of the title Hero of the Soviet Union.

Aircrews needed great courage and skill to reach assigned targets through a wall of antiaircraft artillery fire, break away from the tentacle-like air defense searchlight beams, and repel Focke-Wulf or Messerschmitt fighter attacks. It was no less difficult to rendezvous with the partisans. "Partisan aircrews," as they were called in ADD units, had to land in clearings in the woods and on alpine air strips. The special importance of such flights into the enemy's deep rear area obliged these crews to avoid encounters with the enemy. Requisite expertise included the ability to outwit the Hitlerites, cross the front line undetected, avoid interception by Luftwaffe fighters, and steer clear of antiaircraft artillery batteries.

All of this work done by ADD crews was prompted by the party's instructions to organize a campaign in the German rear area. In September 1942 the decision was made to assign an ADD air regiment for special flights to the partisans. This mission was assigned to one of the best ADD units having the most experienced aircrews trained to fly at all hours and in all weather. It was commanded by V. S. Grizodubova, a courageous and energetic aviatrix who had made a record-breaking flight in an aircraft of the Rodina class. Valentina Stepanovna personally carried out the most important mission, bombarding the enemy south of Kursk and dropping personnel and equipment by parachute into the enemy's rear area. Teaching her subordinates, she herself learned from pilots Georgiy Chernopyatov, Vitaliy Maslennikov, and others who supported the partisans Kovpak, Saburov, Fedorov, and Begma, and from Boris Lunets, alumnus of the Moscow Komsomol.

The cargoes carried by our "partisan aircrews" included table salt and antitank guns, explosives and movies, newspapers and medicines, radio transmitters and typewriters. During the war years some 14,000 persons

were transported to partisan locations aboard ADD aircraft. Many hundreds of sick or wounded partisans were brought out on return trips. Pilots were also assigned special missions, such as bringing to Moscow documentary information concerning the condition and disposition of the enemy's ground forces. About 500 such documents seized from the Nazis by our partisans were delivered in this way.

During the war years our aircraft moved from enemy-occupied territory to Moscow much in the way of valuables which could not be evacuated in time due to the sudden invasion of the German Fascist troops. Items of value were hidden from the invaders by patriotic State Bank and Savings Bank employees, corporation accountants, and retail store cashiers and passed to partisan bases for safekeeping. As soon as a continual and reliable air bridge was established between the partisan areas and Bol'shaya Zemlya,* thousands of grams of precious metal and hundreds of millions of rubles worth of bonds and bank notes were entrusted to military pilots for delivery to Moscow.

In accordance with directives from higher authority, ADD units performed other responsible missions. The most important was evacuation of wounded and orphaned children from enemy-occupied territory. Aircrews called upon to fly deep into the enemy rear area considered it a special honor to be assigned the task of repatriating Soviet children whose motherland had not forgotten them. Even battle-seasoned airmen suffered greatly when such a trip was interrupted by enemy action. The fascist vultures, avoiding encounters with our fighters in open combat, sought out the slow-moving bombers engaged in transport duty and strove to destroy them in any way possible.

At the critical moment only the pilot and the aerial gunner remained at their posts. All other crew members were shielding the children with their bodies. So it was in the fall of 1943, when Vasily Asavin's bomber was attacked in flight by two fascist vultures. The bomber was hit in about 500 places, three crew members perished, but the children were saved.

Aviation naturally sustained combat losses during the fierce struggle with the enemy. Many ADD airmen who bailed out over enemy-occupied territory could not always recross the front line on their own. They often found their way to partisan detachments with the help of the local inhabitants. For example, after being shot down in the enemy rear area, Captain N. Luzhin and Senior Lieutenant P. Avdeyev headed a 30-man detachment which conducted daring operations against the fascists for 4 months. Pilot Nikolay Plyushch also commanded a partisan group, while

*[*Bol'shaya zemlya*—literally 'Big Land,' referring to any territory that was devoid of German occupation—U.S. Ed.]

Guards Captain Krasavin fought the Hitlerites for 2 years as a member of a partisan subunit.

ADD pilots and navigators flew aerial reconnaissance on behalf of the partisans and bombed fascist punitive detachments. When Belorussian partisans were beating off a 2-division German force of more than 15,000 in the vicinity of Drissa and Osveya, long-range bombers also struck the enemy.

Long-Range Aviation units raided installations in the enemy's rear area on the basis of precise information received from partisans and members of the underground. ADD veterans still speak especially warmly of those intrepid patriots who, in Orel, Krasnodar, Mogilev, Orsha, and elsewhere, were not intimidated by the Hitlerite terror, operating resourcefully and boldly to plot vital installations and designate targets for our bombers bearing the red star.

When the German occupiers had been driven from Soviet soil, ADD was ordered to render fraternal aid to those combating fascism in Poland, Bulgaria, Czechoslovakia, and Yugoslavia.

The crews of a single unit, the 4th Guards Air Division, flew 365 sorties on special missions beyond our frontiers in 8 months of 1944. Weapons for 10,000 men were delivered to Bulgarian partisan detachments, and Czechoslovakian antifascists were supplied with 35 tons of special cargo. During the Slovakian uprising, Soviet airmen lightened their bombers as much as possible, even removing crew armor, in order to increase the airlift of weapons and ammunition to our Slovak friends. Masters of long-range flights Vladimir Dragomiretskiy, Goga Agamirov, and Aleksandr Davydov led combat squadrons to the Slovaks. Their feats were marked by award of the Gold Stars of Heroes of the Soviet Union.

Preserved in a Long-Range Aviation unit's museum is a memento of those flights, a letter which crossed two war fronts and the borders of several states. Its authors, Yugoslav partisans, thank the Soviet airmen warmly for the weapons received and recount their own combat successes. The letter was a reply to a note one Soviet airman placed in an ammunition sack.

During a flight to the Yugoslavian partisans, the Komsomol crew of Junior Lieutenant Korotkov flew their burning bomber into the midst of a Hitlerite antiaircraft artillery battery near Nish.

The title National Hero of Yugoslavia was conferred on Guards airmen I. A. Bulkin, P. I. Dmitriyenko, I. N. Konstantinov, A. T. Monogadze, and V. A. Ulisko, who participated in long-distance raids. Hundreds of

Long-Range Aviation pilots, navigators, radio operators, and technicians received awards from Bulgaria, Poland, and Czechoslovakia.

The Great Patriotic War showed that the actions by our airmen in their struggle against the enemy were prompted by a patriotic readiness to defend our Soviet land and the gains of the people. They overcame all danger because they knew that, even at the price of their own life, like Gastello, they could hasten the triumphant day of victory over the hated enemy.

A profoundly conscientious awareness of Lenin's behest to defend our socialist homeland and a desire to perpetuate the ideals of Great October constituted the ideological basis of the contribution made in the war years by aviators. Political consciousness prompted their heroic thoughts and deeds. Chief Marshal of Aviation A. A. Novikov wrote the following concerning the sources of their selfless and heroic struggle. "Underlying our airmen's exploits was the peoples' self-awareness that the very survival of our country and all its socialist gains were at stake. Pilots performing air-to-air and air-to-ground missions where they rammed the enemy, Soviet infantrymen who threw themselves beneath the treads of tanks and at the gunports of reinforced concrete pillboxes, all in so doing demonstrated with staggering conviction their profound faith and dedication to communist ideals and goals."² Aircrew personnel of Long-Range Aviation—the crews of bombers, reconnaissance aircraft, and hunter-blockader aircraft—rightfully occupy a worthy place among these heroic defenders of the motherland.

During the Great Patriotic War, Long-Range Aviation flew about 200,000 sorties. Each of them involved an enormous amount of work on the part of our Aviation Engineering Service [IAS].

In his book *V pylayushchem nebe* [In the Blazing Sky—U.S. Ed.] A. I. Molodchiy, Twice Hero of the Soviet Union, recalls the technicians and mechanics of his air regiment. "All too often our aircraft became inoperative: almost every day and every night. Inoperative, yes; but not beyond repair. The dexterous hands of our technical personnel always made them airworthy. When and how were they repaired? It is hard to say. But we, the pilots, knew that our aircraft would be ready for takeoff at the appointed time. Among the war's innumerable examples of selflessness, valor, and heroism, an honorable place in the overall contribution to the struggle against fascism is occupied by our ground crews."

² A.A. Novikov, *V nebe Leningrada* [In the Leningrad Sky] (Izdatel'stvo "Nauka," 1971), p. 98.

The news from the front rightly praised those IAS specialists whose labor directly affected combat mission accomplishment and aircrew safety. Commanders, political workers, and engineers did extensive work among technicians and mechanics, indoctrinating them with a feeling of professional pride and a keen sense of responsibility for the constant readiness of each aircraft under their care and for trouble-free functioning of its armament.

Our crews often returned aboard aircraft with a broken wing, a partly-ripped-off canopy, or engine cowling having two or three hundred bullet holes in it. Our ingenious craftsmen and specialists from various services repaired such aircraft in a field situation under camouflage and concealment conditions, often at night during enemy air raids. During the war years the maintenance personnel of just one regiment performed major overhaul on 58 aircraft, replaced 625 engines, 115 fuel tanks, and 106 propellers, repaired 136 wings, and fixed many hundreds of complex instruments and subassemblies. It is no wonder that more than 500 orders and medals were awarded to maintenance personnel in this unit.

IAS specialists conducted operations at field airfields and at staging bases. They participated in the evacuation of immobilized bombers from the places where they had made forced landings. Our ground crews also took part in the defense of our airfields against ground or air attack.

When combat sorties were being flown, ground crew technicians often substituted for sick or wounded aircrew personnel, especially radiomen-gunners. Besides, some ADD regiments had aircraft such as the Pe-8 and Li-2, which always carried a flight technician. Upon successful completion of a mission, when the crew was allowed to rest, flight technicians did not leave the airfield. They worked alongside other specialists to prepare the aircraft for the sorties to come.

ADD regiments had the excellent tradition of assigning the most reliable aircraft and the most experienced technical crews to young pilots and navigators just on the threshold of their combat career. Technicians and mechanics who earned the utmost respect of aircrew personnel were N. Barchuk, V. Ovseyenko, P. Maleyev, V. Dmitriyev, M. Krokhin, and G. Katkov. Especially deserving of mention among the scores of engineers who showed themselves to be talented organizers of technical personnel and experts in their specialty are Yu. G. Mamsurov, G. D. Pavlov, and N. I. Milovanov. The latter, having served in the first Il'ya Muromets subunit, had been with Long-Range Aviation since its inception.

Many flight mechanics and technicians acted courageously in critical situations, saving fellow crew members, as did Flight Technician Ivan Denisovich Latyshev. His aircraft burning and its controls jammed due to

antiaircraft artillery fire, he helped his wounded comrades into their parachutes, assisting them in pulling the ripcord and bailing out. With no time left to do so himself, he perished, but he saved his comrades.

Latyshev's comrade-in-arms A. T. Shibayev, whose bomber went out of control when a large shell fragment jammed a rudder link-rod, found and removed the fragment through a hole he made in the cargo compartment floor. Andrey Zazulya, flight mechanic on an ADD transport, saved the life of an unexperienced paratrooper who pulled his ripcord prematurely, freeing the shroud lines from the transport's tail through an access hole hacked through the fuselage. Gennadiy Petrov, flight technician on a giant 4-engine Pe-8 hit by antiaircraft artillery fire, picked up and jettisoned a smoking shell which found its way into the cabin, thus demonstrating an example of fearlessness.

ADD was the richer for the know-how of the best technical personnel, such as V. Petrovskiy, Ye. Akulevich, M. Zyabnev, V. Pechenkov, L. Anisimov, and N. Lebedev, who were experts in such specialties as engines, air frames, instruments, electronic equipment, and aerial photography gear. A difficult job during the war years also fell to munitions handlers, who dealt with a wide variety of bombs ranging from 1.5-kilogram antitank peewees to 9-ton high explosive bombs, which rivalled a front-line fighter in length and even surpassed it in weight. Before the war was over, Obolevskiy, Gurichev, Fedoseyev, and Bolotov, technicians and mechanics from the armaments service, had each hung the equivalent of a trainload of bombs on the racks of our aircraft.

Long-Range Aviation's aviation specialists justified the confidence placed in them. By their military labor they made a worthy contribution to insuring our victory. The best of them were entrusted with the servicing of christened aircraft and of aircraft acquired by workers from their own personal savings.

Several hundred heavy bombers were built and delivered to crews in long-range bomber units from funds donated by the public. As early as December 1941 long-range bomber regiments received DB-3f bombers with such names as "Kolyma Komosomol Member" and "Far North Construction Worker" painted on their fuselage. Communist pilots of Unit "X" received three aircraft christened "Moscow Bolshevik." Major Zaitsev, a Guards unit commander, flew a bomber named "Platonovka Collective Farmer," whereas Lieutenant Colonel Terekhin, his counterpart in another unit, flew one called "Sukhinichi Collective Farmer." Guards Captain A. N. Kot, a flight navigator in the 10th Guards Air Regiment, flew combat missions aboard a bomber donated to him by his

compatriots from Tokmakskiy rayon,* while P. M. Furs, a pilot in the 224th Guards Regiment, flew one called "Avenger."

Early in January 1943, our central press reported that workers in the People's Commissariat of the Aircraft Industry (the Scientific Research Institute and plants) pledged to build the aircraft for one ADD regiment, one fighter division, and one ground attack division during the first quarter, in excess of planned quotas and funded by voluntary contributions from the workers. On 22 January 1943 *Pravda* informed its readers that the aircraft builders had already collected 55 million rubles for this purpose.

At first, the Komsomol's famous ward Aleksandr Molodchiy flew one of 10 aircraft named "Khabarovsk Komsomol Member." He was later assigned a bomber named "Oleg Koshevoy." When Oleg's mother Yelena Nikolayevna learned of this, she wrote to Molodchiy. "I am very proud that the aircraft has been entrusted to you. I know it is in reliable and strong hands."

Lieutenant Petrov's crew flew bombing sorties against the Hitlerites. His Il'yushin bomber bore the inscription "To my pilot son from his father Yermolay Loginovich Petrov."

It was not unusual for rear area workers—the owners of the combat vehicles—to come to frontal airfields to present their winged gifts to ADD aircrews. As veterans recall, a particularly moving meeting took place at a frontline airfield when delegates from villages in Tambovskaya oblast came to turn over a bomber named the "Platonovka Komsomol Member" to Senior Lieutenant Mitroshin, member of the unit Komsomol bureau. After he flew a combat sortie in the aircraft, he reported to his sponsors that it was a fine aircraft, had a special "volatility" and good engines, and responded well to the stick. At the same time, the unit commander presented the collective farmers with an aerial photograph depicting the results from Mitroshin's sortie—wrecked structures and burning rolling stock at a German-occupied station.

The patriotic campaign during the war years to raise funds for the manufacture of military aircraft was widely supported within ADD units, too. Aircrew, ground crew, rear support and communications personnel contributed hundreds of thousands of rubles. For example, in the fall of 1942 the Komsomol contingent of ADD's 50th Air Division raised a considerable sum for the purchase of bombers designated "Falcon of the Southern Front." At the initiative of Party members in ADD's "X"

*[rayon—Soviet political-administrative unit—U.S. Ed.]

Guards Air Regiment, funds were raised for the production of combat aircraft designated "Honor of the Guards."

Rear area workers and those in aircraft construction plants provided Long-Range Aviation with the aircraft it required. As early as 1942, the labor productivity at long-range bomber plants increased 150–200 percent and planned output was being exceeded. At first, 20,000 man-hours were expended on the construction of an Il-4, but a year later this expenditure was reduced by 40 percent.

Thanks to the heroic labor of the patriots in the rear area, ADD's aircraft inventory increased 10-fold in 3 years. Approximately 270 heavy bombers participated in the defense of Moscow, but more than 450 fought in the battles for Stalingrad. And, whereas 740 ADD crews supported ground force operations on the Western Front, the corresponding figure for the Belorussian fronts was 1,226. More than 1,500 long-range bombers participated in the battles at the final stage of the war.

Aircraft builders and creators of engines, workers in weapons plants and oil refineries did more than create ADD's material base. At least as important was their contribution to the morale of its men. They inspired the servicemen, urging them on to even greater feats of arms. Through correspondence, those at the front kept their counterparts in the rear area informed of their own combat experiences and the exploits of heroes in combat against fascism. The transfer of know-how in indoctrinating people, information on labor and military feats, meetings of delegations, exchange of banners and traveling pennants—all this spiritually enriched the troops at the front and in the rear area. Their friendship during the war was a brilliant manifestation of the unity of the army and the people. This friendship fostered the mutual responsibility of the aerial warriors and the workers to increase their contribution to overall victory, to the cause of annihilating the enemy.

The Berlin operation began on 16 April 1945. The night before our ground troops mounted their attack, 743 long-range bombers of the 18th Air Army dropped thousands of bombs on enemy positions in a 42-minute raid. Dozens of defensive fortifications were destroyed. Altogether, 3,500 tons of bombs were dropped on the enemy by our long-range bomber regiments during the 6-day offensive on the Berlin axis.

A bomber crew which distinguished itself in the tense concluding battles for Berlin was that of Captain S. I. Kretov. In collaboration with his navigator Matyushenko, he found and hit the smallest objective, "point targets," as airmen call them. In the course of the war Kretov flew more than 400 combat sorties, accounting for 60 enemy aircraft destroyed on the ground and 10 shot down in aerial combat. Busts of

Kretov are on display at his birthplace and in a Rostov-on-Don museum. At a regimental meeting on historic Victory Day, this valiant pilot said, "Through all the trials of war we proudly carried on our bombers' wings the red stars symbolic of peace and freedom. Let us be eternally faithful to the color of these stars, to the combat banner under which we triumphed!" S. I. Kretov, a Long-Range Aviation pilot, was awarded the title Twice Hero of the Soviet Union.

The combat operations of Long-Range Aviation units in the West concluded with the sorties on Berlin at the end of April 1945. However, dozens of long-range bomber crews were assigned an unusual mission on Victory Day. On the evening of 9 May the hum of heavy aircraft engines resounded above festive, exultant Moscow. The parading aircraft left luminous tracks behind them in the darkening sky, while variegated plumes of fireworks rose from below. Flight technicians, gunners, radio operators participated enthusiastically in the grandiose festive salute.

Three months later, Long-Range Aviation participated in the liquidation of a second hotbed of war and aggression fomented by imperialist Japan in the eastern regions of the Asiatic continent. In August and September 1945 Long-Range Aviation units also made a significant contribution to the annihilation of Japanese forces in the Far East.

At midnight on 9 August 1945 heavy bombers of the 19th Bomber Air Corps struck the principal Japanese military targets in Manchuria. The night bombers hit barracks, bases, and supply depots at Changchun and Harbin, and the Kwantung Army's headquarters. Japanese tank and artillery units also sustained considerable personnel and equipment losses. Moreover, war production installations at Solun, Dolon-Nor, and Debosy were destroyed.

Long-Range Aviation's Regiment "X," with its Il-4 bombers commanded by Major A. F. Dubchenko, during the first days of combat against the Japanese made three raids against remote targets. Crews from this unit, after a night flight of 5-6 hours, refused to rest and steadfastly asked the command to assign them a combat mission after the aircraft had been up-loaded.

The rapport between Long-Range Aviation personnel and our ground troops was further enhanced in the battles with Japanese troops. Frontal Aviation, restricted by the radius of its aircraft and absence of airfields in the offensive zone, could not always support our mechanized formations. Air support for our ground troops was provided by long-range bombers operating from main operating bases. Bomber formations played an important role in cutting Japan's transportation and destroyed traffic on enemy lines of communication. Long-Range Aviation, in coordination

with units from the Pacific Fleet Air Force and Frontal Aviation, thwarted enemy movement of troops and combat equipment from Manchuria to Japan.

Under the unique conditions of the Far East Theater of Military Operations, personnel from heavy bomber units exhibited a high level of combat training, moral fiber, and political maturity.

Units of the DBA, ADD, and the 18th Air Army flew more than 200,000 sorties, i.e., 6 percent of the VVS total, during the Great Patriotic War. But, they dropped almost a third by weight of all bombs released by Soviet aviation in the course of hostilities. Our heavy bombers accumulated more than 700,000 hours of flying time during the war, 40 percent of their sorties being in support of ground forces and 30 percent against enemy rail communications. ADD formations participated in cruel battles with the Hitlerites on all operational sectors of the Soviet-German Front from the Barents Sea to the Caucasus, from the Volga to Berlin and Prague.

The honor of the Guards designation for special distinction was conferred on 5 air corps, 12 divisions, and 43 regiments in Long-Range Aviation. Six aviation formations and 38 long-range bomber units were awarded USSR orders. Exemplary successes by Long-Range Aviation formations were formally recorded by the Supreme High Commander on 27 occasions. The title Hero of the Soviet Union was conferred on more than 250 Long-Range Aviation airmen, six of whom were so honored on two occasions.

"... In the Great Patriotic war of the Soviet people against Fascist Germany,"—it states in Order No. 51 of the Supreme High Command, dated 19 August 1945 and devoted to the results of the combat operations of the Air Force—"our aviation fulfilled with honor its duty to the motherland . . . The Soviet people, the victorious people, are rightfully proud of the combat glory of their airmen."

Chapter 3. Jet-Propelled, Missile-Equipped, Supersonic—Always Combat Ready

For several hours on sunny 9 July 1967, it seemed as if a thunderstorm were raging 30 kilometers southeast of Moscow. Lightninglike flashes occurred progressively closer to the airfield, then regressively more remote toward the zenith. The noise heard at ground level alternated between a shrill whistle, a monotonous hum, and an avalanchelike roar.

On that day there was a large flyby at Domodedovo Airport in honor of the 50th anniversary of Soviet power. Never before were so many new aircraft concentrated in one area. Millions of horsepower in all were developed by the jet engines of the aircraft that participated in the parade. On that day the latest combat aircraft were displayed. The strike capability of some models was a hundred times greater than that of ADD units in the final stage of the Great Patriotic War.

Not only the flyby, but the celebration in its entirety, heralded the triumph of Lenin's program for the development of domestic aviation. The formation of sports aircraft spelled out the name so dear to our airmen and to all Soviet people—"Lenin." Depicted on the red flags decorating the airfield was the profile of the leader of the revolution. Designers of the formidable combat aircraft were Lenin Prize winners.

More than half the aircraft in the flyby were piloted by communists, warriors of Lenin's party. Also participating were pilots whose Komsomol card featured the red silhouette of that great friend and teacher of Soviet youth. Moreover, while most of the Komsomol pilots flew aircraft of the flying-club type, some flew supersonic missile-equipped models. And on the dress uniform or best suit of many a spectator, a veteran of war or labor, shone the gold of the Order of Lenin. Lenin was in the heart and thoughts of each participant in the flyby, and of each spectator.

On the eve of the flyby thousands of Moscow residents and guests in the capital visited the exposition of aeronautical equipment dedicated to 50 years of successful domestic aircraft construction. Of special interest to visitors were the heavy combat aircraft—subsonic and supersonic

missile-equipped aircraft, bombers, and reconnaissance aircraft powered by jet engines. The crews of each of these formidable combat aircraft could strike a target with the most powerful bombs or missiles, could fly in the stratosphere or virtually at ground level in all seasons, at all hours, and in any kind of weather. Each aircraft exhibited could carry fuel sufficient to reach areas and targets many thousands of kilometers away. As reported in the press, on the very eve of the celebration devoted to the 50th anniversary of Great October, the crews aboard Soviet strategic missile-equipped aircraft made long-distance nonstop flights. Evaluating the quality of Long-Range Aviation, our newspapers stated that ADD had the capability of conducting operations on a global scale.

Slightly more than five decades separate us from the founding of Soviet Russia's first aircraft unit, the Northern Group.

During that period, Long-Range Aviation's aircraft inventory, as well as its entire organizational structure, tactics, and system for training aircrew and ground-crew personnel, went through several stages of development.

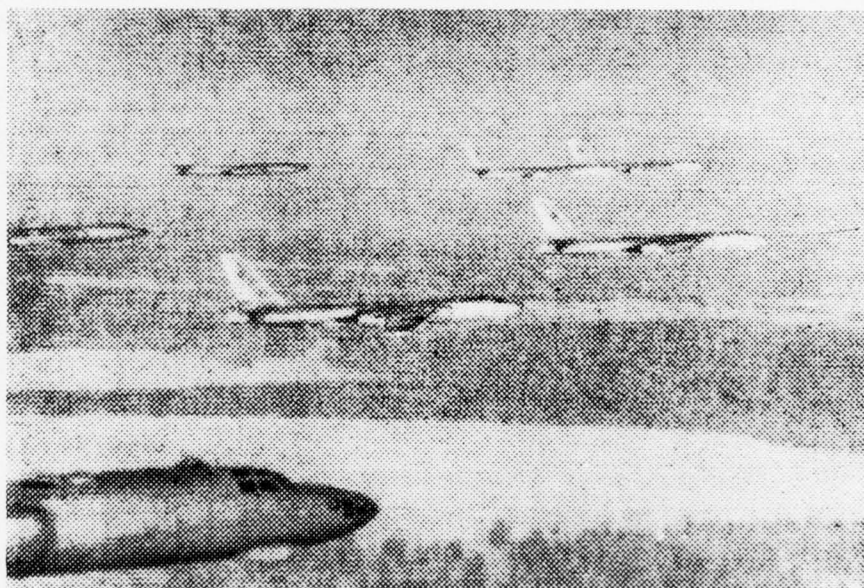
From the multiengine Il'ya Muromets, which dominated the first stage, our heavy aviation made the transition to the all-metal TB-1 and TB-3 heavy bombers. Their aeronautical properties and purpose played a major role in the coining of the new title, Heavy Bombardment Aviation, which characterized the second stage. The third stage was the longest. For almost 20 years the image of our Long-Range Bomber Aviation was determined by its long-range bombers. The superior combat characteristics of our Il-4, Yer-2, TB-7 (Pe-8), and other bombers allowed our



In the Battle Honors Shrine of Long-Range Aviation's Unit "X," Chief Marshal of Aviation K. A. Vershinin (extreme left) and Marshal of Aviation F. A. Agal'tsov (third from the left) are shown with a group of VVS officers.

crews to participate in the defeat of the German Fascist occupiers. The Tu-4, a new postwar extra-long-range bomber, brought the era of heavy piston-engined aircraft to a close.

With changes in equipment, armament, and missions of the combat units, the command structure was improved and its elements renamed. With the advent of branches of aviation within the VVS, Heavy Bombardment Aviation was established with a group of specialists who directed it from the center. Then Special Purpose Aviation was formed with its own command elements and subordinated directly to the People's Commissar of Defense. In the mid-1930's, the Directorate of Long-Range Bomber Aviation (DBA GK) was formed and, in May 1941, the latter was redesignated the ADD Directorate.



Jet bombers in a group flight.

The resubordination of Long-Range Aviation from the Soviet Air Force to the Supreme High Command General Headquarters in March 1942 was dictated by the combat situation. When conditions changed, ADD Headquarters was reconstituted as Headquarters, 18th Air Army, in December 1944 and reintegrated with the Soviet Air Force. After the war Long-Range Aviation was formed with the 18th Air Army as its core. Therefore the concept of continuity triumphed, and the principle of mutual ties between units and command elements prevailed throughout the half century of its development.

The fourth stage was associated with a quantum jump in Long-Range Aviation's equipment—the advent of the jet engine. In this stage, the firstborn in the family of long-range jet bombers was the Tu-16. Shown soon thereafter in flybys were strategic giants from the drawing boards of

A. N. Tupolev's Special Design Bureau and then ultraheavy four-engine bombers created by designers under the guidance of V. M. Myasishchev.

The fifth stage saw the advent of all-weather strategic aircraft armed with weapons of unprecedented destructive power.

Supersonic aircraft equipped with missiles armed with conventional or nuclear warheads of various types and purposes laid the foundation for the sixth stage in the development of Long-Range Aviation.

The Special Design Bureau headed by General Designer Academician A. N. Tupolev occupied a leading place in the development of new aircraft models. Many outstanding heavy aircraft designers worked in this collective and earned the right to design independently. They constituted the principal group which developed combat equipment for Long-Range Aviation units during the prewar and postwar periods.

The basic Long-Range Aviation aircraft during the war years was a twin-engine bomber created by the designers in the special bureau under the guidance of S. V. Il'yushin. The original model was called the DB-3, but the modernized version was known as the Il-4. Altogether, more than 6,800 were produced. These reliable and stable bombers were flown successfully by the crews of long-range bomber regiments. The Il-4 had a takeoff weight in excess of 10 tons, carried up to 2.5 tons of bombs, and had a range of about 4,000 kilometers.

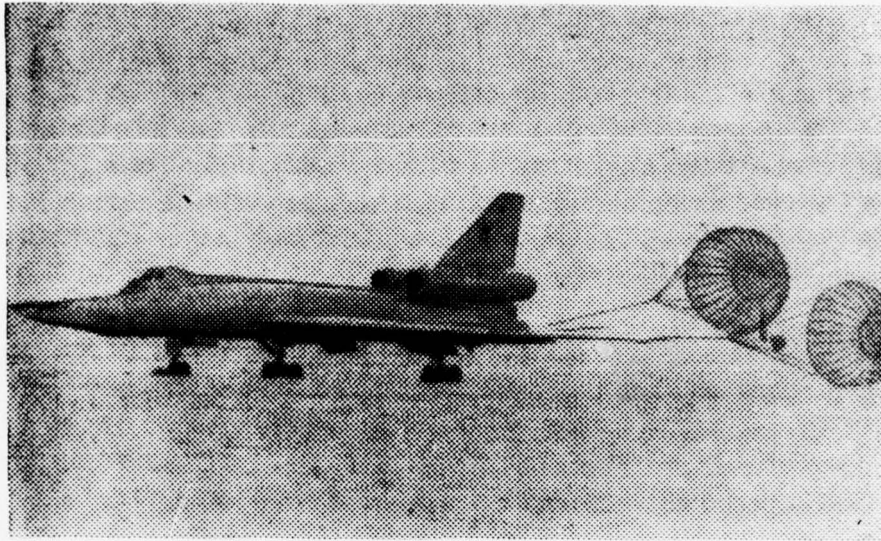
The TB-7 (Pe-8), a heavy bomber designed by V. M. Petlyakov, an alumnus of the "Tupolev school," was used for raids into the enemy's deep rear area. It had a crew of 8-12 and was produced in two variants, one with conventional engines using avgas, and the other using diesel fuel. Some TB-7's had a fifth engine located in the fuselage, used at high altitudes to drive the blowers for the four propelling engines. This 32-ton giant had a ceiling of 10 kilometers. Its great speed was attributable to improved aerodynamic forms, complete retraction of the undercarriage, careful sealing of the fuselage, and high-quality finish on external surfaces.

On 9 July 1967 there was a flyby featuring more than 300 airplanes and helicopters.

The military part of the flyby was headed by a huge supersonic missile-equipped aircraft with swept wings. Its engines were located unconventionally, in the tail section of the rudder fin. Several subunits of heavy aircraft capable of breaking the sound barrier followed the flagship in tight formation over the airfield.

At the controls of these high-speed giants were Major General of

Aviation I. V. Gorbunov, officers V. Chesnokov, A. Batyayev, V. Loman, L. Sergeev, V. Fedorov, and others.



A supersonic DA aircraft on the landing run.

The aviation holiday and flyby received considerable press coverage abroad. In the opinion of foreign observers, the air parade demonstrated that the Soviet Union had made immense progress in the development of missile-equipped military aircraft during recent years. On 10 July 1967 Warsaw newspapers had huge headlines: "Sensation in the sky! The history of aviation knows no precedent for such a remarkable demonstration." The news agency *France-Presse* reported: "... it is a matter of technology which is on a very high level. Such a level could be achieved only on the basis of extensive research facilities and a first-class aircraft industry."¹

The air exposition and the flyby on 9 July 1967 convincingly showed the enormous successes of the Communist Party and Soviet government and of all the people in strengthening the defensive might of the USSR and increasing the combat might of Soviet military aviation.

Visitors to the exposition at Domodedovo Airport were duly impressed by the Tu-16. The chief designer of this aircraft had made a breakthrough, semirecessing the engines in the center section of the wing, thereby improving the wing's characteristics and reducing the fuselage's resistance. The bomber's superior aerodynamic properties were also attributable to the introduction of semirecessed turrets, fuselage fairings, and an undercarriage bogie which turned upside down when retracted.

¹ *Pravda*, 10 July 1967.

Displayed side by side with the Tu-16 were even more powerful combat aircraft. In 1959 Soviet airmen had made a very long nonstop flight in one of them, promptly climbing to an altitude of 13,000 meters with a 55-ton load in the bomb bays.

As the guides pointed out, the engines on our heavy aircraft are without equal. The power developed by the engines on one missile-equipped aircraft exceeds the total capacity of the Volkhov Hydroelectric Power Station. Engine air compressors are also very powerful. Those of the Tu-16, for example, supply as much as a million cubic meters of air per hour to the engines' intake nozzles in flight.

One Long-Range Aviation aircraft is fitted with two RD-3M engines having a thrust of 9700 kilograms each. Larger Soviet aircraft have four NK-12MV engines of 15,000 equivalent horsepower each. And this is by no means the limit. The cockpits of the modern missile carrier are equipped with the last word in electronics and automation.

Soviet Long-Range Aviation and its achievements are inseparably linked with the activities of the collectives in the design bureaus, scientific research institutes, and aviation plants. N. S. Rybko, A. D. Perelet, F. F. Opadchiy, N. I. Goryainov, N. V. Dedukh, and other test pilots made a great contribution to supplying Long-Range Aviation with the latest equipment.



A tanker aircraft refueling a missile-equipped aircraft in flight.

Long-Range Aviation crews and combat aircraft are capable of flying long distances. This depends primarily on fuel supply. The question of in-flight refueling arose long ago, and our Soviet aviation was the first to do this. The first successful tests to this end were conducted back in the 1930's, fuel being transferred from a flying tanker to TB-1 and TB-3 heavy bombers. After the war, such tests were continued with the Tu-4.

With the advent of powerful jet engines, fuel expenditures rose considerably and the requirement again arose to refuel heavy aircraft in flight. Tanker aircraft and aerial refueling systems appeared. A missile carrier or a bomber no longer had

to make intermediate stops en route to a remote target. A crew need not enter a hostile air defense zone to acquire the target and launch a missile. The carrier changes course immediately after launch and the missile independently flies a very great distance and destroys any target—land based or maritime, fixed or mobile. The aircraft's position may be fixed by the crew, using celestial navigational or beacon navigational aids. Also available for this purpose is the robot-automat, the navigational computer.

Airborne radar warns the crew that enemy interceptors are approaching. After such an attack, the aircraft commander can rapidly descend to low altitudes without fear of crashing, because altitude data are issued continuously by his radio altimeters.

Short- and long-range navigational systems support flying missions. Radio technical equipment shows the pilot the route back to base and facilitates his approach and landing.

Now at the service of Long-Range Aviation pilots are the latest devices, including an abundance of intelligent and complex automatic equipment. These are useful to an individual who is experiencing physical strain or has a shortage of time or information. The advent of new devices has enhanced the individual's potential, but at the same time the individual is confronted with the complex task of using such devices skillfully.

Military Pilot First Class Noeriy Pronevich noted in a magazine that "the flight of a Soviet strategic aircraft is subject neither to the distance nor to the time factor. Long-Range Aviation crews command equipment capable of reaching any point on the globe. Their state of training and the means of destruction aboard the aircraft permit them to punish any aggressor severely."²

There has been ample evidence in recent years that Long-Range Aviation has grown in striking power, that its crews are well trained, and that its personnel are true to their revolutionary traditions and dedicated to the Communist Party. The professional mastery, high moral standards, and strong political convictions of aircrew personnel manifested themselves during the recent exercises "Dnepr," "Dvina," "Okean," and "Yug." These exercises, which were a serious challenge for many Long-Range Aviation units, pointed the way to further improvements. "Experience from military training for the past year attests to the fact that all the winged missiles launched by our strategic supersonic aircraft destroyed the targets. Scores of 100 percent in hits—such were the results

² *Sovetskiy Soyuz*, 1968, No. 2, p. 6.

of the work of our aviators, to whom the motherland entrusted this formidable weapon."³

In 1965, evaluating the military labor of Soviet aviators, the Presidium of the USSR Supreme Soviet established the honorary titles Meritorious Military Pilot of the USSR and Meritorious Military Navigator of the USSR. These titles are conferred on officers of the Soviet Air Force for special merit in the mastery of aviation equipment, for high indices in the training and indoctrination of aircrew personnel, and for perennial accident-free flying. At the present time about 30 Long-Range Aviation pilots and navigators bear these honorary ranks. This includes the veterans from long-range bomber units L. I. Agurin and N. I. Korobchak, Colonels V. S. Vakhnov and A. S. Shmonov, and many others. Younger personnel compare themselves to these individuals, imitate them, and try to develop themselves based on this example.



Colonel V. S. Vakhnov, Meritorious Military Pilot of the USSR.

Changes in personnel constitute a vital element in the military-technical revolution. The advent of the jet engine and more sophisticated aircraft has led to significant changes in cadre training. The introduction of supersonic missile-equipped aircraft coincided with the arrival in the units of pilots and navigators with higher engineering training. Skilled young officers actively glean everything relevant from the experience of the veterans of the last war and successfully assimilate the modern aircraft. Many are high class specialists who soon solo in the heavy bombers, and the best of them command subunits.

Young aircraft commanders and experienced crew members are initiators of socialist competition for the conquest of new frontiers in combat and political training in honor of the 50th anniversary of the formation of the USSR.

Competition was conducted between units in Long-Range Aviation on the occasions of recent historic jubilees such as the centennial of Lenin's

³ *Krasnaya zvezda*, No. 92, 20 April 1971.

birth and the 50th anniversaries of the Soviet Armed Forces and of October. The best units in these competitions were honored with Memorial Banners bestowed by the Central Committee of the CPSU, by the Presidium of the USSR Supreme Soviet, and by the Soviet Government, as well as with honorary Lenin certificates and with other awards.

The aviators from one squadron had superior results in pre-congress competition between heavy bomber subunits. For a number of years, that squadron had been the best in the unit, earning the title "Excellent" and holding the challenge pennant. The secretary of that squadron's party organization, aircraft commander Major B. V. Dyukov, was elected delegate to the 24th CPSU Congress, with other military delegates representing Long-Range Aviation's party members at our party's highest forum.

The airmen of excellent units and subunits, the leaders in socialist competition, especially esteem such honorary awards as challenge banners of the Komsomol Central Committee, local party and Soviet organs, and Komsomol Central Committees at the union republic level. On the eve of the 24th CPSU Congress, unusual awards were presented to the best collectives in Aviation Engineering Service, to leading technical subunits, and to outstanding specialists. Collectives from the design bureaus and the social organizations at plants producing military aircraft and other equipment established new prizes and diplomas for the aviators. The presentation of these prizes further strengthened the friendship between the troops of Long-Range Aviation and the designers, engineers, and workers and was a moving demonstration of the unity of the armed forces and the people. Memorial pennants bearing the name of a hero from the past war have been instituted in many units for the victors in socialist competition and for the best aircrews. In the Guards Unit "X" all aircrew personnel consider it a great honor to win the pennant named after Heroes of the Soviet Union Dmitriy Barashev or Ivan Dotsenko. This attitude reflects continuity from generation to generation and a desire to multiply the traditions of the Guards unit. By cultivating in its personnel awareness of its combat traditions and by engaging in socialist competition to maintain its Guards glory even in peacetime, Unit "X" has excelled and for some years past has borne the honorary title of "Excellent." For especially high indicators in combat and political training and successes in the communist indoctrination of youth, the unit's Komsomol organization has twice been awarded the challenge Red Banner conferred by the Central Committee of the republic's Komsomol.

One of the vital elements of socialist competition is the struggle for high indices in flying, bombing, and missile launching. Great success in this endeavor has been attained by officers of the Navigator Service under the guidance of such excellent navigators and bombardiers as



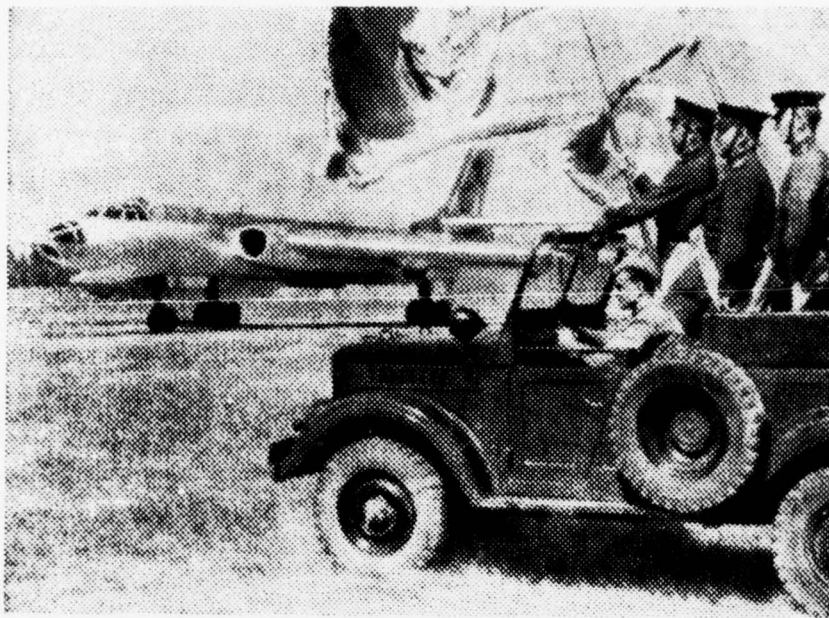
A delegate to the 24th CPSU Congress, Military Pilot 1st Class Major B. V. Dyukov prepares for a flight.

Meritorious Navigators of the USSR A. D. Ketsmets and D. A. Khokhlov and officers K. Ya. Omel'chenko, I. A. Varlamov, V. N. Antonov, and P. V. Bulygin. In the clouds, at night, and in all seasons, these masters of the navigator's art bring the aircraft with jeweler's precision to targets at 5-digit distances from the point of departure. They impart to the younger generation of navigators the ability to fix their aircraft's position and to determine its course at all hours, in all weather, during magnetic storms, and at latitudes frequented by the aurora borealis.

The units and subunits that win in socialist competition are primarily those in which the real masters of the heavy supersonic missile-equipped aircraft are the highly specialized, erudite, experienced officers. One such officer, Captain of Technical Services Valentin Nikolayevich Lunev, has more than 3200 hours of flying time to his credit and has supported hundreds of bombing, missile-launching, and aerial refueling sorties. Lunev has received 10 orders and medals. Many young flight technicians are being taught by him on the ground and in the air.

A modern military aircraft contains hundreds of instruments and aggregates. The proper functioning of this equipment is entrusted to Long-Range Aviation's best specialists, including Captain of Technical Services A. V. Kishchenko, senior technician Lieutenant I. I. Ivanov, chief of an excellent munitions group N. A. Murav'yev, Military Technician 1st Class A. L. Brizhitov, and dozens of other officers of the Aviation Engineering Service.

Among those who made a good contribution to the fulfillment of socialist obligations undertaken by their subunit were Senior Sergeant (Career) Viktor Osin, gunner; Lyubov' Veselova, radiotelegraph operator; and Private Anatoliy Timchenko, excellent driver. A score of constructive suggestions were put forward by Specialist 1st Class Petr Zakharov, who has received more than 50 commendations for exemplary conduct from his superiors.



At the takeoff point. Banners are hoisted as a Guards aircrew departs on a long-distance flight.

Master Sergeant (Career) I. I. Prokhorov, installation chief, was the recipient of 12 governmental awards during 8 years of exemplary service. In recent years, he has turned out scores of first-rate specialists. On the occasion of the 50th anniversary of the Soviet Armed Forces and for successes in service and in assimilation of new equipment, Prokhorov was awarded the medal "For Meritorious Service." Sergeant Valeriy Kurbanov, an excellent aerial gunner and sniper of the airwaves, was a winner in socialist competition in honor of the 24th CPSU Congress.

Each flight by a modern missile carrier is the result not only of the labor of its crew, but also that of specialists from many ground-based services. Troops from communications and rear services subunits and representatives of dozens of professions ready the flight and support it from the ground. They are often called upon to use complex equipment. For example, an aircraft engine monitoring unit used during exercise "Dvina" contained 96 instruments. Another was a powerful airfield electric power station. Pilots appreciate and respect the labor of ground crew and rear services personnel. It is not unusual for pilots of strategic aircraft to present a letter of gratitude or a signed testimonial to the rear services and communications specialists and to the troops of the ground services for their excellent support to these difficult flights.

More than half the soldiers and sergeants serving in an excellent manner in Long-Range Aviation units received their basic military training in clubs or circles for amateurs of flying, radio, marksmanship or model-making, or in the schools and training centers of the Defense Society.

The basic military training school and the **DOSAAF*** hobby groups in its schools and courses are both necessary and important. Soviet youth are indoctrinated with love for the Armed Forces, their choice of a specialty is facilitated, and they are familiarized with the rudiments of life in the Armed Forces.

In their turn, first-class specialists, masters of military affairs, and qualified aviators—soldiers, sailors, and officers—are leaders of the amateur circles and sections of the DOSAAF system, part-time military instructors, and organizers of militarized games and matches. Long-Range Aviation Komsomol organizers send their best activists to pioneer detachments, schools, and summer camps. Commanders and political workers from aviation units do all they can to facilitate young peoples' visits to the Soviet peoples' revolutionary, military, and labor shrines.

Reserve officers, veterans of Long-Range Aviation, consider it a great honor to assume a leadership role in schools, clubs, and circles for amateur aviators or for young Air Force enthusiasts, and are proud to work in the primary organizations of DOSAAF.

The ties between the Komsomol organizations of enterprises, collective farms, construction projects, institutes, and schools on the one hand, and those of Long-Range Aviation units on the other, are becoming stronger and more diversified each year. The resultant friendship between airmen and civilian youths makes for an improvement in the military-patriotic indoctrination of youths and in their training to defend our socialist fatherland.

True to the precepts of their oath of allegiance, the servicemen of Long-Range Aviation maintain their high moral standards and act in accordance with the code of behavior appropriate to builders of communism. For example, while on leave Private Gennadiy Gavrilov at his peril rescued several of his fellow countrymen from a fire. Private Mikhail Lub saved a woman from being run over by a train, but lost both legs in doing so. Twenty villagers, Komsomol youths, gave blood to save his life.

Heroically fighting fires at important military installations, Senior Sergeant Shitikov and Junior Sergeant Fomin gave their lives to prevent fuel and ammunition from exploding. Both were decorated posthumously with high governmental awards. A feat performed by Senior Sergeant (Career) A. Mozolevskiy during a training flight was crowned with the Order of the Red Banner. In the Combat Glory Room, a photograph of

*[DOSAAF—'Society for the Voluntary Assistance to the Army, Air Force, and Navy.' Prior to 1966 designated Osoaviakhim, the Society provides the Soviet populace with training in military and economic skills—U.S. Ed].

gunner A. Mozolevskiy is displayed together with portraits of recipients of orders and medals for heroism in the campaign against fascism.

Sergeant V. Avilov and Private First Class G. Noskov, both Komsomol members, were decorated with the Order of the Red Star for daring in a dangerous situation during which they saved their commander. Private First Class Samochernykh and Private Kamalov distinguished themselves in a rescue operation involving a bomber caught in a thunderstorm.

In peacetime as in wartime, soldiers and sergeants emulate the officers and follow the example set by communists, commanders, and political workers. One such man, M. V. Bzhezovskiy, assimilating a new jet bomber, was in a grave situation when his instructor became a casualty in flight. The young trainee assumed command of the crew, successfully completed the assigned mission, and returned safely under extremely adverse weather conditions. In accordance with a decree of the Presidium of the USSR Supreme Soviet, Bzhezovskiy was awarded the Order of the Red Banner.

Colonel Yu. P. Pavlov, Colonel V. A. Artemov, and other Long-Range Aviation officers such as Bogatyrenko, Kirilets, Udal'tsov, Surov, and Grigor'yev, were among the recipients of government awards. Demonstrating courage and selflessness, they proved that heroic feats are not confined to wartime, and that, in the training situation, one should behave as one would in combat.

Long-Range Aviation crews become seasoned in long-distance flights at maximum and minimum altitudes at all hours and in all weather. DA officers, warrant officers, sergeants, and soldiers acquire high moral and combat qualities. In encounters with the elemental forces of nature, even tested and reliable equipment does not always stand up. But its masters, the crews of missile-armed aircraft and bombers, turn out to be more durable than the strongest metal. Such aircrews derive their unexampled courage not only from combat annals and the feats of war veterans, but also from peacetime heroes.

Thanks to these politically mature and valiant airmen and these high-class specialists versed in the new technology, military aviation is endowed with those cardinal virtues that have not lost their significance even in the missile age.

In the opinion of the outstanding Soviet aircraft designer A. N. Tupolev, the experience of recent years shows that the missile will not render the aircraft obsolete, for contemporary aircraft will be replaced by the aircraft of the future.

In the opinion of V. M. Myasishchev, creator of a formidable combat aircraft, remarkable new victories by our motherland in the taming of the air ocean are already apparent. There are good grounds for counting on even more rapid progress in aviation.

But perhaps modern scientific and technical progress will lead to the invention of unmanned long-range aircraft, i.e., flying robots. This question has been posed by several airmen. The renowned test pilot G. A. Sedov, Hero of the Soviet Union, answers it in the negative. In his opinion "the master of equipment is still the man who controls it. In an aircraft or space ship, this is the pilot. Equipment helps him by making his job easier and by ameliorating the conditions under which he performs it, but can never supplant him in the control role. . . ."

Many military specialists of the leading capitalist powers have declared that the advent of nuclear missiles has cast doubt upon the importance of aviation and its role in warfare. Prompted by such utterances, the Deputy Commander in Chief of the Soviet Air Force, Colonel General-Engineer M. Mishuk, has drawn the following conclusion: ". . . little time has passed, yet the inconsistency of the very formulation of such a question has become apparent even to the most uncompromising adherents of missiles. Besides, the equipping of aviation with nuclear missiles has strengthened its significance as one of the basic services of the armed forces."

Experience shows that there is no substitute for aviation where accomplishment of many combat missions is concerned. The man in control of an aircraft and its weaponry is irreplaceable in combat. Only he can instantaneously make the necessary decision or alter the one already made. Past hostilities, present peacetime practice, and all the activities of aviation units confirm this scientifically founded fact.

The future of Long-Range Aviation, its status, and its combat capabilities are determined by the prodigious achievements of Soviet science and technology and by Soviet industry, especially in the defense sectors. Confirmation of this was provided by the demonstration of Soviet air power staged for the benefit of party and government leaders on 21 May 1971. In the course of the demonstration, various types of modern aircraft were exhibited, including supersonic strike bombers and missile carriers. Soviet Air Force pilots demonstrated the combat properties of the new models, showing at the same time a high level of combat and flying training.

Our Soviet Air Force is equipped with formidable aircraft; the might of the weapons entrusted to it by the Soviet people is unlimited. But, its main asset, its "gold reserve" and that of Long-Range Aviation as well,

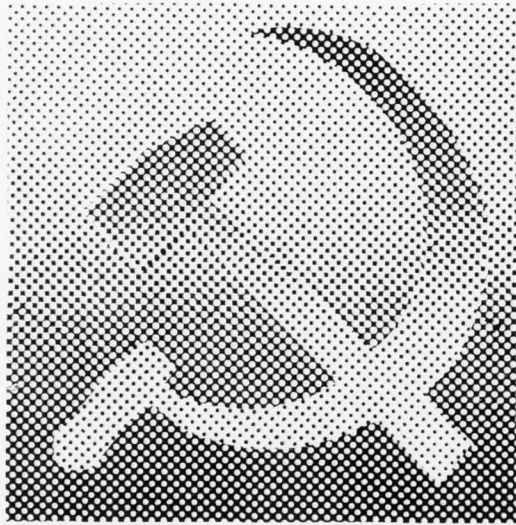


Marshal of Aviation P. S. Kutakhov, Commander in Chief of the Soviet Air Force, chats with Unit "X" personnel participating in the troop exercise "Yug."

is people. The presence in Long-Range Aviation units of people well educated and trained, seasoned in exercises and long-distance flights, ideologically convinced, and dedicated to our socialist motherland is the result of the enormous work of the party and its Lenin-inspired Central Committee, which demonstrate concern for the improvement and development of the Air Force.

CPSU leadership and the spreading of the party's influence to all aspects of troop training and indoctrination constitute the ultimate basis upon which the modern Air Force has been built, and constitute a vital source of the successes achieved by Long-Range Aviation in the accomplishment of the complex and responsible missions assigned to it.

Fulfilling the Party's instructions, the personnel of Long-Range Aviation, like the Soviet Air Force as a whole, are vigilantly monitoring the intrigues of the imperialist provocateurs and warmongers. Pilots and navigators, all aircrew personnel, and ground-based specialists are perfecting their skills daily and are steadily improving the combat readiness of their units, attaining ever greater successes in combat and political training.



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